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Cross-Border Exits from Venture Capital Investments: Impact and Determinants of Success for Ventures, Venture Capitalists, and Society as a Whole

Helsinki, the 24th of May, 2005

Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Engineering

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HELSINKI UNIVERSITY OF TECHNOLOGY ABSTRACT OF THE MASTER'S THESIS
Industrial Engineering and Management

Author: Rasmus Karl Gustaf Molander

Subject of the thesis: Cross-Border Exits from Venture Capital Investments: Impact and Determinants of Success for Ventures, Venture Capitalists, and Society as a Whole

Number of pages: 120 + 15 | Date: 24.5.2005 | Library location: TU

Professorship: Strategy and International Business | Code of professorship: TU-91

Supervisor: Professor Markku Maula

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As the venture capital industry has grown and become ever more significant it has attracted an increasing amount of attention among scholars. However, the internationalization of venture capital exits has so far not been in the focus of academic studies. This thesis contributes to filling this gap by studying the impact and determinants of success of cross-border exits from venture capital investments. It focuses on the domain of growth oriented entrepreneurship and technological innovation in countries with small home markets. The thesis takes the view of the ventures, the venture capitalists that finance and support them, and society as a whole.

The thesis approaches the problem using two interlinked studies: A quantitative study on European venture capital backed portfolio firms exited 1995-2004 and case studies on four Finnish venture capital backed high-technology firms exited 2000-2004. The results show that cross-border trade sales generate higher returns than domestic ones. An important underlying reason for this is that large multinational acquirers buy emerging high-technology firms because they can cheaply multiply the technologies created by them. They do this using their existing structures, e.g. manufacturing facilities. The products/services are then distributed using existing distribution channels, which are expensive to build but cheap to use once they exist. Cross-border trade sales and their higher valuations are driven by a lack of domestic companies with the required size active in the relevant industries. Cross-border trade sales are, thus, beneficial for portfolio firms as technologies that are not commercialized swiftly are likely to be bypassed by other technologies in the fast paced high-technology industries. Furthermore, due to the venture capital cycle, cross-border trade sales are crucial also because past exit success has a strong correlation with a venture capital firm's ability to raise future funds and thus stay in the business of venture capital. Consequently, cross border exits are crucial if venture capital is to be available to emerging high-technology firms in countries with small home markets. As a result, cross-border trade sales are also in the best interest of the society as a whole since emerging high-technology firms gain access to much needed complementary assets and capital, not available in the home country, through them.

Cross-border IPOs are found to generate higher proceeds and post under-pricing market values than domestic ones. The reasons for this are mainly inefficiencies on the home stock markets; primarily volatility, clustering, information asymmetry, and lack of analyst coverage. In other words, cross-border IPOs are pursued because of better capital availability, reduced information asymmetry, stricter demands imposed on corporate governance, and increased liquidity due to a wider investor base.

Keywords: Venture capital, exit, cross-border | Publishing language: English

ACKNOWLEDGEMENTS

I am indebted to several persons and organizations not only for enabling my thesis, but also for making it a challenging and rewarding experience.

First, I would like to express my gratitude to my supervisor Markku Maula for the invaluable help he provided in shaping the topic and for the help and support he provided throughout the process. Second, I would like to thank Nexit Ventures, Bio Fund Management, and Tekes for providing financing and lots of support for writing this study. Third, many other persons have given valuable help and insights for this study. I would especially like to thank Artturi Tarjanne, Erkki Pekkarinen, Ilona Karppinen, Leila Ylikahri, Will Cardwell, Timo Petäjä, Keijo Väkiparta, Juha Mikkola, Antti Paatela, Auvo Kaikkonen, Timo Pohjonen, Harri Happonen, Yngve Nyman, Taneli Jouhikainen, and Hannu Järvinen.

Finally, the most important support for my thesis and my studies in general I have received from the people close to me, especially my grandparents, parents, and Gabriella.

The views expressed in this study, and all the potentially remaining errors are the sole responsibility of the author.

Rasmus Molander
Helsinki, May 2005

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1. INTRODUCTION

1.1. BACKGROUND

As the venture capital industry has grown and become ever more significant it has attracted an increasing amount of attention among scholars. The literature on how the industry works and how it is financed is nowadays both wide and deep. However, the internationalization of venture capital exits has so far not been in the focus of academic studies. This is not all that surprising as, for example, only about one out of twenty European IPOs were completed in a foreign country between 1991 and 2001. However, this is likely to change as the venture capital industry evolves in small countries, e.g. the Nordic countries, with exit markets of limited efficiency. This development is largely driven by the realization, confirmed by academia (e.g. Jeng and Wells, 2000), that venture capital is an important ingredient in fostering growth-oriented entrepreneurship and technological innovation. Furthermore, also the European Commission has awoken to this development. As a response to recognizing the importance of the private equity industry as an accelerator of the commercialization of innovations and as a creator of economic growth the Commission has set as an objective to create an effectively working single market for financial services, including private equity, to support the competitiveness of Europe (European Commission, 2003).

The importance of exit markets stems from their position as one of the central drivers determining the functionality of the venture capital market. In small countries it is unlikely that initial public offerings on the local stock exchange would supply the venture capital market with sufficient exit opportunities. Also trade sale exits are more likely to be found abroad, a fact that is easily discerned when studying the geographical spread of corporations with the required size. On the other hand a lot of sentimentality and patriotic feelings are involved when local firms are sold to foreigners. Arguments that are often heard are that firms that are sold abroad are under-priced and that the domestic dimension is lost in the decision-making due to the new foreign owners. Furthermore it is often claimed in public press that the focus of the business, and with it core functions like R&D, are likely to move abroad under the influence of the new owner(s). The flipside of the coin, as often stated, is that most ventures from small countries are likely to be too small to succeed as independent entities and that the fruits

of their labor will be better realized as part of a strong global company. Furthermore, as venture capitalists from small countries like to point out, international exits mean that the value created by the portfolio firms and their owners can be realized and invested in new promising, domestic, ventures.

As can be discerned the arguments are many and varied but no consensus seems to exist. Moreover, the fact that this subject has been studied very scarcely means that there is a lack of evidence to back the arguments up with. In other words, even though foreign exits are of fundamental importance if the venture capital market is to work efficiently and emerging firms are to have sufficient funding at their disposal in small countries, the subject has been studied scarcely. It is this void that this study aims to fill.

1.2. RESEARCH PROBLEM AND OBJECTIVES

This thesis studies the impact and determinants of success of cross-border exits from venture capital investments. It focuses on the domain of growth oriented entrepreneurship and technological innovation in countries with small home markets. In other words the focus is on firms that need to internationalize to thrive in a global competition. The thesis takes the view of the ventures, the venture capitalists that finance and support them, and society as a whole. The purpose of this study is to find ways through which these parties can make the best possible use of cross-border exits. The research problem is formulated to a research question in Table 1-1. The research question is further divided into sub-questions and objectives of the study.

Table 1-1. The research question, sub-questions, and objectives.

Research question	
How do cross-border exits from venture capital investments affect the performance of ventures and venture capitalists as well as the fundamentals for growth-oriented entrepreneurship and technological innovation in countries with small home markets?	
Sub-questions	**Objectives**
How are cross-border exits valued in comparison to domestic exits?	To uncover how cross-border exits are valued as compared to domestic ones; More specifically, to single out whether the statement that firms that are sold abroad are under-priced is true.
How do venture capitalists influence the successfulness of cross-border exits?	To identify how the pre-exit and exit process presence and actions of venture capitalists affect cross-border exit performance.

How do cross-border exits influence the development of the venture capital market and the capital available to emerging firms in countries with small home markets?	To uncover the effects cross-border exits have on the venture capital market in the country of origin of the exited firms.
Under what circumstances are foreign exits beneficial for portfolio firms?	To recognize the pre-exit and exit process factors that affect exit value and post-exit performance of portfolio firms.
What is the effect of cross-border exits on the domestic dimension in the firms' operations and decision making?	To identify the effect foreign ownership has on the focus and strategy of the business and the positioning of core functions.
How could the effects of cross-border exits be maximally exploited by ventures, venture capitalists, and society as a whole?	To distinguish the actions that should be taken by the mentioned parties in response to cross-border exits to maximize their own performance.

1.3. METHODOLOGY

This thesis employs three research methods. First, the literature study summarizes what is already known in, for the research question, relevant fields and builds the ground for the empirical studies. The literature study focuses on the venture capital cycle, the internationalization of high-technology ventures, and on cross-border exits. These areas are studied to identify potential relationships between cross-border exits and the performance of ventures, venture capitalists, and the fundamentals for growth-oriented entrepreneurship and technological innovation. The literature study also includes a descriptive study of the Finnish market which builds ground for the second empirical study. The literature consists mainly of articles published in scientific journals. Additionally some related textbooks, unpublished working papers, and newspaper articles have been used so as to get a complete picture of the current state of the art in the problem domain.

Second, the first empirical part of the thesis is a quantitative study. The model of the study is based on the literature study as well as on some views often stated in the press. The purpose of the quantitative study is to examine statistically whether cross-border exits have an impact on the exit performance of European venture capital backed firms. More specifically the areas that are covered are the pricing of cross-border exits as compared to domestic ones, the effect venture capitalists have on exit performance, and how the industry of the firm being exited affects exit performance. The findings of the quantitative study are critical to understanding how cross-border exits are valued in comparison to domestic exits, how venture capitalists influence the successfulness of cross-border exits, how cross-border exits influence the development of the venture

capital market and the capital available to emerging firms in countries with small home markets, and under what circumstances foreign exits are beneficial for portfolio firms. The quantitative analysis is based on a data set covering all European countries from 1995 to 2004.

Third, the second empirical part of the thesis consists of case studies. The case studies, as does the thesis as a whole, rely on triangulation (Webb, Campbell, Schwartz, and Sechrest, 1966). Triangulation builds on combining qualitative and quantitative data to merge the strengths and neutralize the weaknesses of the different methods (Jick, 1979). Both within-method and across-method triangulation are used in this study. Within-method triangulation refers to using multiple techniques within a method to collect and interpret data (Denzin, 1978). Across-method triangulation involves using several methods to ensure that the observed variance reflects that of a trait and not that of a method (Campbell and Fiske, 1959). In short, within-method triangulation involves cross-checking for internal consistency or reliability whereas across-method triangulation tests the degree of external validity (Jick, 1979). Furthermore, the use of multiple methods and measures may uncover some unique variance that may otherwise have been neglected. In particular, qualitative data may suggest explanations to quantitative relationships to which the quantitative methods are blind (Jick, 1979). The findings of the case studies are critical to understanding how venture capitalists influence the successfulness of cross-border exits, under what circumstances foreign exits are beneficial for portfolio firms, what effect cross-border exits have on the domestic dimension in the operations and decision-making of a firm, and how cross-border exits influence the development of the venture capital market and the capital available to emerging firms in countries with small home markets. The four case firms represent the Finnish medical/health/life science and information and communication technology industries. These industries are chosen because they receive considerable venture capital backing, are seen to be of uttermost importance in the future, and constitute the bulk of the growth-oriented entrepreneurship and technological innovation in society.

1.4. STRUCTURE OF THE THESIS

Besides the introduction and the conclusions the thesis includes four main sections: The literature study, the descriptive study, the quantitative study, and the case studies. The structure of the thesis is presented in Figure 1-1.

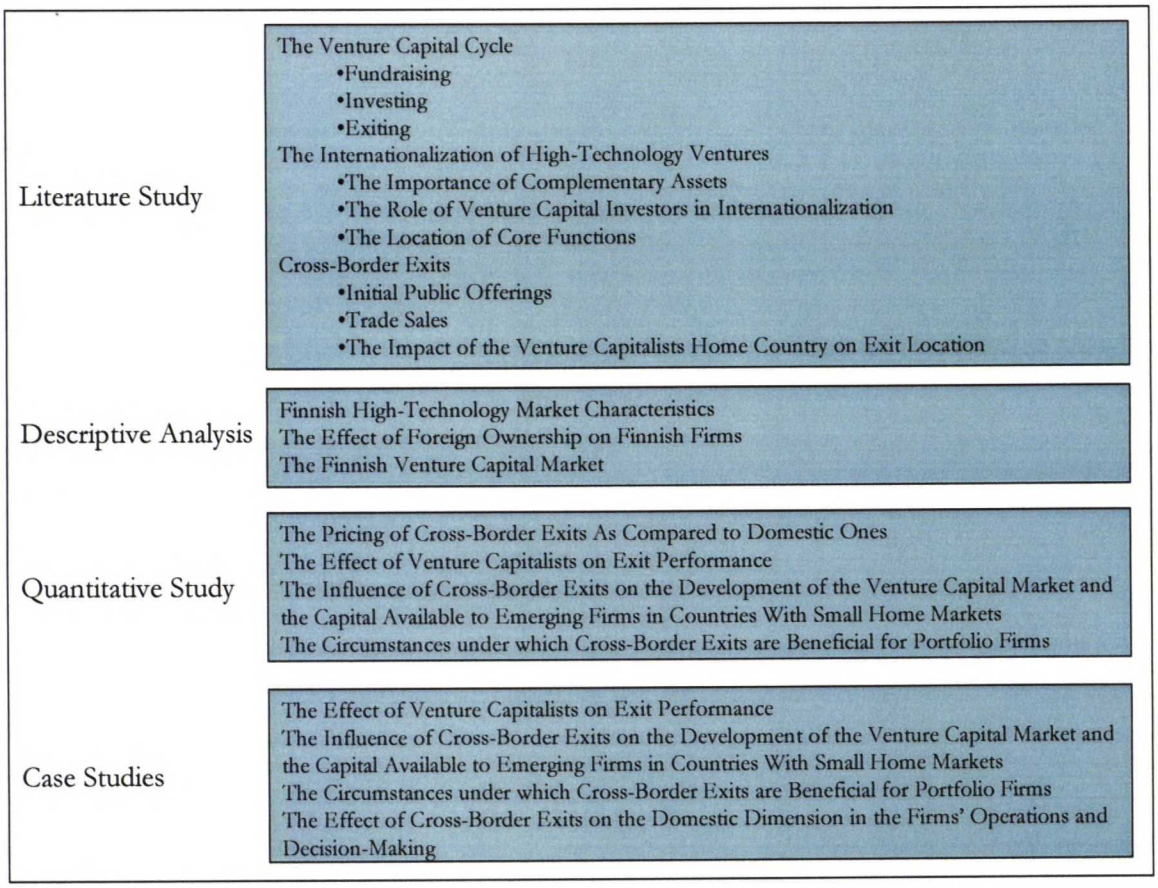

Figure 1-1. The structure of the thesis.

Section two consists of a literature study which summarizes what is already known in, for the research question, relevant fields. It also builds the ground for the empirical studies. The literature study focuses on the venture capital cycle, the internationalization of high-technology ventures, and on cross-border exits.

Section three is a descriptive study of the Finnish market which builds ground for the second empirical study. The section describes the characteristics of the Finnish high-technology market, the effect of foreign ownership on Finnish firms, and the Finnish venture capital market.

Section four consists of a quantitative study on trade sales and IPOs of European portfolio firms. The issues studied are the pricing of cross-border exits as compared to domestic ones, the effect of venture capitalists on exit performance, the circumstances under which foreign exits are beneficial for portfolio firms as well as the influence of cross-border exits on the development of the venture capital market and the capital available to emerging firms in countries with small home markets.

Section five consists of case studies. The firms studied are Finnish medical/health/life science and information and communication technology firms. The case studies rely on triangulation, i.e. on the use of several methods and measures. The case studies examine how venture capitalists influence the successfulness of cross-border exits, under what circumstances foreign exits are beneficial for portfolio firms, what effect cross-border exits have on the domestic dimension in the operations and decision-making of the firm, and how cross-border exits influence the development of the venture capital market and the capital available to emerging firms in countries with small home markets.

Section six discusses the reliability and validity of the empirical methods and the results of the study.

The study concludes with section seven. The conclusions chapter includes a summary of the results, discussion of the contributions and the implications of the thesis, recommendations to ventures, venture capitalists, and policy makers, limitations of the study, and suggestions for further research.

1.5. KEY CONCEPTS

In this part the key concepts used in the study are presented. While this part explains some of the definitions, the operationalizations used in the empirical part of the study are presented in the Methods part of Chapter 4.

1.5.1. PRIVATE EQUITY AND VENTURE CAPITAL

According to the European Venture Capital Association (EVCA) the private equity industry provides equity capital to enterprises not quoted on a stock market. Private equity can be used to develop new products and technologies, to expand working capital, to make acquisitions, or to strengthen a firm's balance sheet. It can also be used to resolve ownership and management issues in connection to successions in family-owned firms or in connection to buyouts (EVCA, 2005). Venture capital is a subset of private equity and refers to equity investments made for the launch, early development, or expansion of a business. More specifically, venture capital is defined as professional equity co-invested with the entrepreneur to fund an early stage venture. Venture capital can further be segmented into seed, start-up, and expansion capital. Independent of stage, the general idea of venture capital is to offset the high risk of the ventures the money is invested in with higher than average returns on investment (EVCA, 2005).

Unfortunately, the terms private equity and venture capital are not unanimous (Jeng and Wells, 2000). In the United States the term private equity is divided into venture capital and buyout capital. Thus, the term venture capital does not include buyouts as it is understood in the United States. In Europe the terms private equity and venture capital are, deceptively, used interchangeably. This thesis concentrates on venture capital as it is defined in the United States. In other words, this thesis focuses on firms who have received equity investments for the launch, early development, or expansion of the business and on the venture capital firms who perform these investments, be they seed, start-up, or expansion stage investments.

1.5.2. VENTURE CAPITALIST AND PORTFOLIO FIRM

The term venture capitalist is used to refer to the manager of a venture capital fund who has responsibility for the management of the fund's investments in particular portfolio firms. Portfolio firm is, in this study, understood as the firm or entity into which a venture capital fund has invested directly (EVCA, 2005).

1.5.3. EXIT, INITIAL PUBLIC OFFERING, AND TRADE SALE

Venture capitalists earn returns on their investments by exiting them (e.g. Black and Gilson, 1998). Exit refers to the liquidation of holdings by a venture capital fund (EVCA, 2005). In general, venture capitalists exit their investments using one of the following methods.

Initial public offering (IPO) refers to the sale or distribution of a firm's shares to the public for the first time (EVCA, 2005). Venture capitalists typically retain their shares at the date of the IPO and subsequently sell the shares into the market in the months or years following the IPO (Cumming and MacIntosh, 2003).

Trade sale refers to the sale of a firm's shares to an industrial investor (EVCA, 2005). This type of exit can be structured as the venture capitalists - and other owners - selling all the shares in return for cash, shares of the acquirer, or other assets. Alternatively, the transaction may be structured as a sale of the firm's assets or as a merger between the portfolio firm and the acquiring firm (Cumming and MacIntosh, 2003).

An exit may also be executed as a *secondary sale* in which the venture capitalist sells her shares to a third party, usually another venture capitalist (EVCA, 2005). A secondary sale differs from a trade sale in that only the shares of the venture capitalist are sold to the third party - the entrepreneur and other investors will retain their investments (Cumming and MacIntosh, 2003).

In a *buyback* exit the venture capitalist sells her shares back to the entrepreneur and/or the firm (EVCA, 2005). A *write-off* is typically conducted if the portfolio firm has failed (EVCA, 2005). In a write-off, the venture capitalist makes a decision to spend no further time or effort on bringing the investment to a successful exit and essentially walks away from it. Many write-offs involve the bankruptcy and consequent disappearance of the firm (Cumming and MacIntosh, 2003).

This thesis focuses on IPOs and trade sales as they are the primary mechanisms through which ownership is transferred to foreign, non-venture capital, owners. In other words, IPOs and trade sales are the most important mechanisms used by venture capitalists to

perform permanent cross-border exits, i.e. cross-border exits where the new owner(s) does not plan to sell her ownership within a limited time.

1.5.4. FULL AND PARTIAL EXIT

It is important to realize that an exit may be full or partial. A full IPO exit is defined as one where the venture capitalist sells all her holdings within one year of the IPO. A partial IPO exit implies that the venture capitalist has sold only part of her holdings during the same time period (Cumming and MacIntosh, 2003). A full trade sale exit involves the sale of the entire firm for cash. In a partial trade sale exit, the venture capitalist receives - often illiquid - shares in the acquirer company instead of cash (Cumming and MacIntosh, 2003). A partial trade sale typically arises when a private company buys the portfolio firm using its own shares (Cumming and MacIntosh, 2003). In this case the shares are necessarily very illiquid due to the absence of a ready market in which to sell the shares and because private companies typically have constitutional or contractual restrictions on the ability of any shareholder to resell her shares, such as requirements for board and/or shareholder approval of a share transfer (Cumming and MacIntosh, 2003).

In the case of partial exits it is good to keep in mind that at least part of the ownership remains in the hands of the portfolio firm owners. The situation is best described as the former portfolio firm owners now owning a smaller part of a bigger cake. In more formal terms a partial exit means that the former owners of the portfolio firm remain as owners in the new entity but their influence and control over the operations of the firm are reduced. Furthermore, their interests in the firm's assets are less substantial than the direct interest they formerly held (Cumming and MacIntosh, 2003).

2. LITERATURE STUDY

This chapter looks at the streams of literature that are relevant from the point of view of emerging firms, venture capitalists, and society as a whole when pondering about the up and downsides of cross-border exits. First, it looks at the venture capital cycle and the impact exit possibilities have on all stages of this cycle. It then turns to the internationalization of young firms and the affect venture capitalists and complementary assets have on this process. Next, it studies exits in general and foreign exits in particular. Before digging deeper into the mentioned subjects, a few words on the business called venture capital seem to be in place.

Venture capital firms are firms whose major business is setting up one or many venture capital funds and striving to maximize their value. Investors, most often institutional, can then place their money in these funds. The money the funds manage is invested in early-stage businesses with high potential but also high risk (e.g. Sahlman, 1990). The venture capital firms mostly arrange themselves as limited partnerships with the venture capitalists serving as general partners and the investors as limited partners. The venture capital firm is usually structured as a management company responsible for several legally separate limited partnerships, i.e. funds (e.g. Schmidt and Wahrenburg, 2004). Typically, the general partners provide only a limited amount of capital to the raised funds. According to Sahlman (1990) the proportion of capital invested by the general partners is typically about one percent of the total size of the fund. Each fund normally invests most of its capital during the first three to five years of its existence where after few if any investments are made in firms not already part of the portfolio (Sahlman, 1990). The focus now turns to exiting - through initial public offerings (IPOs) or trade sales - the investments: As the ownership in the firms is converted into cash and marketable securities returns are made to the partners rather than reinvested in new firms (e.g. Sahlman, 1990). The management firm withdraws its compensation as a fixed management fee and as a specified part of the returns the funds generate - the so called carried interest (e.g. Schmidt and Wahrenburg, 2004).

In performing the above mentioned functions venture capital firms enter into contracts with both outside investors and entrepreneurial firms. These contracts have the

following characteristics and address the following fundamental problems (Sahlman, 1990; Schmidt and Wahrenburg, 2004):

- Staging of the commitments of capital and preserving the option to abandon, i.e. investing in rounds - The sorting problem: How to select the best venture capital firm and the best ventures, respectively,
- The use of compensation systems that are directly linked to value creation - The agency problem: How to minimize the present value of agency costs, and
- Preserving ways to force the management to distribute investment proceeds - The operating cost problem: How to minimize the present value of operating costs.

In addition to the money a venture capitalist provides the ventures in her portfolio with, she is also actively involved in the management of the firms – as a member of the board of directors and by retaining, in addition to her ownership rights, other important economic rights - and thus also supports them in many non-financial ways (e.g. Sahlman, 1990). These so called value added services include strategic analysis (e.g. Macmillan, Kulow, and Khoylian, 1988), monitoring of performance (e.g. Ehrlich, De Noble, Moore, and Weaver, 1994), and professionalization measures (Hellman and Puri, 2002). The portfolio firms also gain credibility (Shepherd, Ettenson, and Crouch, 2000), i.e. certification (e.g. Baum and Silverman, 2004), and access to critical resource holders from the venture capitalist (e.g. Hellman and Puri, 2002). Furthermore, the venture capitalists interface with external resource holders and in this process help the firm raise additional funds (e.g. Hellman and Puri, 2000). A diagram of the relations and flows between investors, venture capitalists, and the ventures can be seen in Figure 2-1.

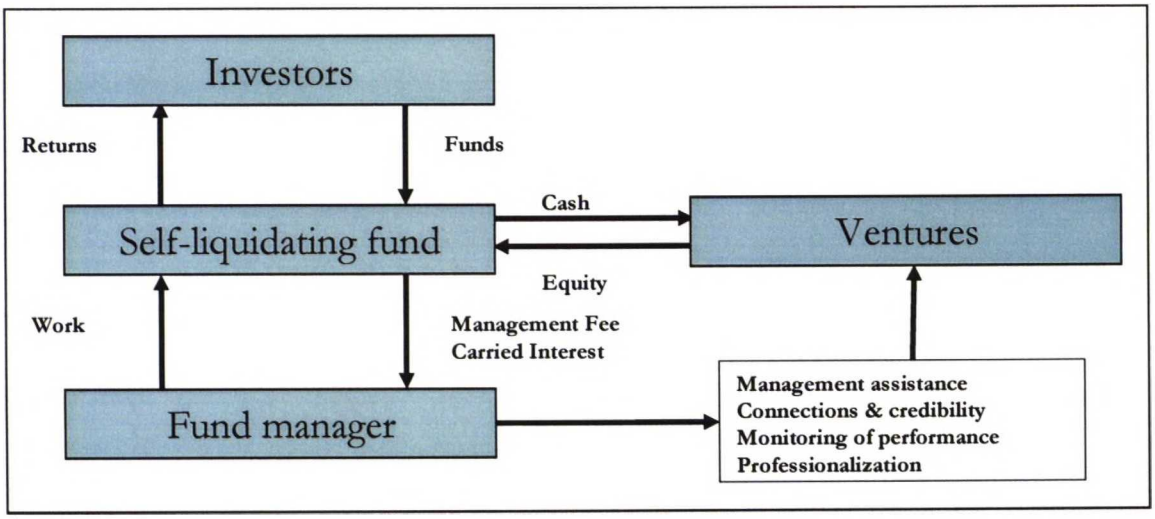

Figure 2-1. An overview of the venture capital process (adopted from EVCA, 2005; Sahlman, 1990; Schmidt and Wahrenburg, 2004)

2.1. THE VENTURE CAPITAL CYCLE

The availability of private risk capital can be seen as a key part of the financial system. This is because even though the venture capital industry is small in comparison to the overall size of the financial system, the firms it supports are often the most innovative, and for this reason also the most risky, in society. Hence, firms supported by venture capitalists are characterized by large information asymmetry, miniature cash flows, and by most of the value being tied up in intellectual, i.e. intangible, assets.

According to Gompers and Lerner (2000a, 2000b, and 2001), the business of venture capital is best understood by considering the whole venture capital cycle which consists of three interrelated stages: fundraising, investing, and exiting. First the capital has to be raised from, mostly institutional, investors. Secondly suitable investment targets have to be identified and contracting has to take place. After this stage the portfolio firms, under the guidance of the venture capitalists, should evolve in a manner that enables a profitable exit. As the returns of profitable exits are returned to the investors they get to assess the quality of their investment. If they are pleased, both compared to the performance of other venture capital funds and compared to other investments, the venture capitalist will be able to raise the money needed for a new fund (Black and Gilson, 1998). In other words, a feedback loop exists between consecutive venture capital cycles because an exit is the only way the venture capital fund can take home the

possible increase in value of its portfolio firms. Exits are thus also venture capitalists primary mechanisms for signaling their ability. Due to this relation past exits have a strong correlation with the venture capital firms ability to raise future funds and thus stay in the business of venture capital. The three stages, and how they are affected by the exit stage, will now be presented in more detail (also see Figure 2-2).

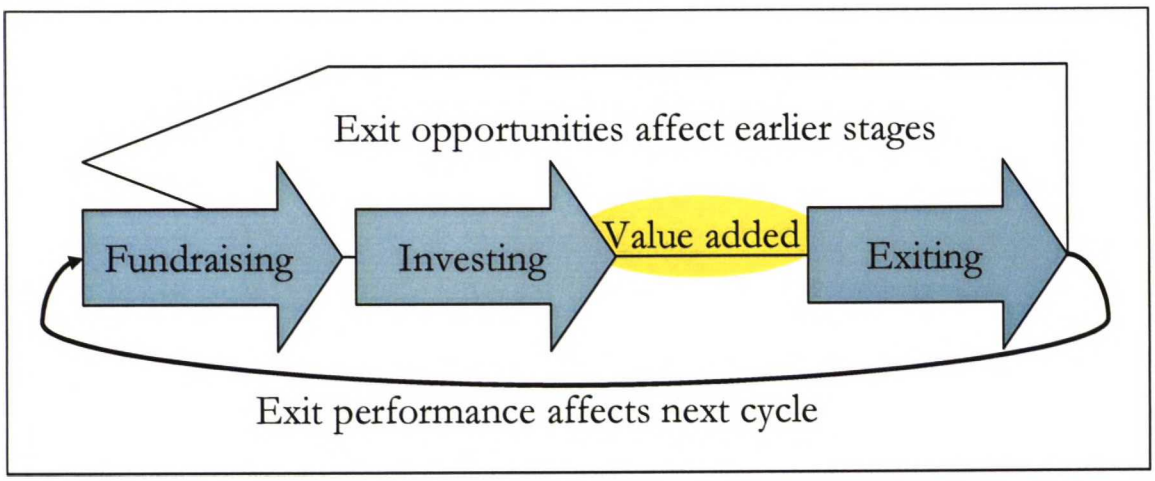

Figure 2-2. The venture capital cycle (adopted from Gompers and Lerner, 2000a, 2000b, and 2001).

2.1.1. FUNDRAISING

According to the European venture capital association (EVCA, 2005) fundraising is the process in which venture capitalists raise money to create an investment fund. These funds are raised from private, corporate, and institutional investors who make commitments to the fund and secure their rights by signing partnership contracts. Due to the costs of writing detailed contracts the partnership contracts between the venture capitalists and capital providers, nonetheless, remain incomplete. Exits are therefore central to the venture capitalists' accountability to capital providers (Black and Gilson, 1998). The reason for this is that the exit price gives a measure of the venture capital manager's skill. In this way exits give the providers of capital an opportunity to allocate their funds to the venture capital managers with the best expertise of promising start-up firms. Exits also make it possible for investors to measure the relative attractiveness of venture capital, its risk and returns, against other asset classes. These relationships, termed the explicit and implicit contract by Black and Gilson (1998), between the

venture capitalist and outside investors are depicted in Figure 2-3. The downside of the centrality of exits is that it may lead to grandstanding, i.e. to young venture capital firms taking firms public earlier than older venture capital firms in an effort to build reputation (Gompers, 1996).

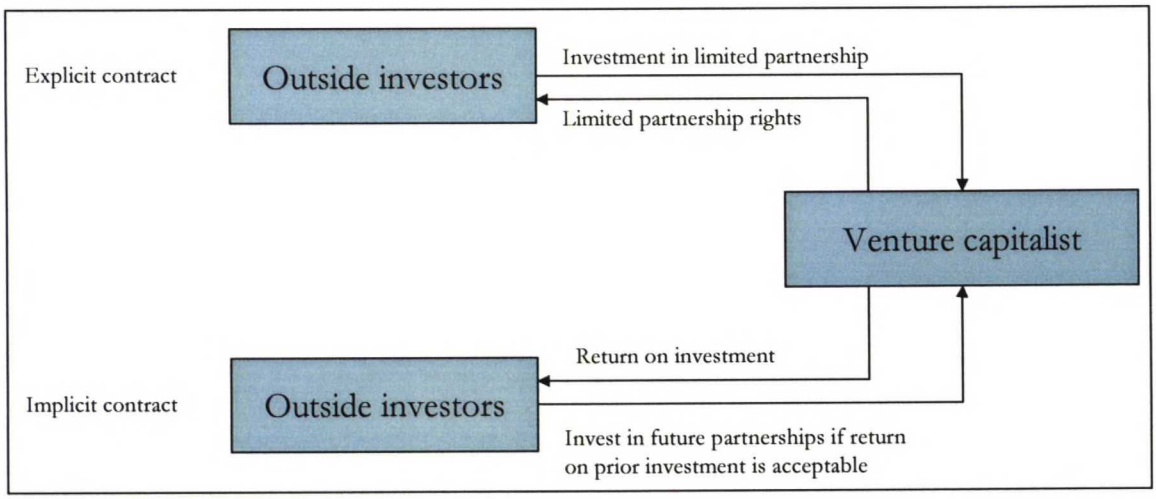

Figure 2-3. The relationship between the venture capitalist and outside investors (adopted form Black and Gilson, 1998).

As initial public offerings (IPOs) make it possible for young ventures to get evaluated by the public market they are especially central to the accountability of venture capitalists. This is because the valuations of the ventures that go public provide a benchmark price for other types of exits. In line with this Jeng and Wells (2000) have been able to show that IPOs are the main driver of venture capital fundraising over time and across countries. This is because IPOs, better than other forms of exits, smoothen the process of contracting between venture capital managers and providers of capital to these managers.

The need for accountability also explains why the lifetime of a typical venture capital fund is usually predetermined. A fixed lifetime means that at certain, predetermined, intervals venture capitalists must return to markets to raise money for additional funds if they are to stay in business (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001).

Previous empirical research has clearly shown that reputation of previous performance, i.e. exits, and the successfulness of fundraising, are interrelated. Other things being

equal, the more successful the previous cycle was, the easier it is to start a new one. Thus, it is the relation between exits and fundraising that determines many of the characteristics of the venture capital industry.

2.1.2. INVESTING

The most obvious effect the exit market has on the investing decision of venture capitalists is on the type of ventures they prefer to invest in. An exit environment that prefers certain types of firms – industry, size, age, risk, etc. wise – is likely to push venture capitalists into preferring such firms. This is because it enhances the degree to which they are able to extract the value created by the firms they have invested in.

The available exit possibilities influence the investing process in other ways a well. Black and Gilson (1998) argue that an exit through an IPO enables the entrepreneur and the venture capital fund to enter a 'self-enforcing implicit contract over control'. This contract makes it possible to give control back to successful entrepreneurs by exiting through an IPO. This means that an exit through an IPO becomes something of a call option on control for the entrepreneur. Exercising the option depends on the success of the venture. The possibility to design such options is the more important, the higher the private benefits – i.e. the value of control - from running the firm is to the entrepreneur. The initial transfer of control to venture capitalists is required because otherwise the ventures, which are often associated with agency problems and high-risks, would not be able raise external financing. Summa sum arum, the prospect of an IPO makes it possible for the venture capitalist and the entrepreneur to contract over agency and information problems and thus also to align their monetary incentives. IPOs are important in this context because trade sales do not include the option for the entrepreneurs to reacquire control.

The availability of exit routes may also have distributional consequences between the entrepreneurs and the venture capitalists (Berglöf, 1994). On the one hand, the entrepreneur wants compensation for running the firm. Thus the entrepreneur's incentives to invest in the venture are reduced if she feels that the likely exit is going to take place in a way that does not compensate her for her efforts (Ali-Yrkkö, Hyytinen,

and Liukkonen, 2001). On the other hand, the venture capitalists are worried about not being able to sell the firm at full market value in connection with an exit. The one who is more likely to suffer a loss when the exit is made usually gets the control rights when the investment is made. Who is the more vulnerable party is dependent on what kind of exit is planned.

It has also been found that highly innovative ventures are more likely to go public than less innovative ones because incumbent firms are often willing to acquire less innovative ventures in order to reduce competition (Schwienbacher, 2001). The exit possibilities may thus have an effect on the entrepreneur's willingness to pursue high-risk projects as they increase the likelihood of an IPO but decrease the likelihood of a trade sale (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001).

2.1.3. EXITING

Black and Gilson (1998) find that the financial and value added services that venture capitalists provide lose their value as ventures mature. Thus, exit and reinvestment makes recycling investors capital to firms that are in better need of it possible. This is jointly efficient for the ventures and the providers of venture capital. This finding is corroborated by Michelacci and Suarez (2001) who suggest that the easier exiting, the faster informed capital, i.e. the human capital of experienced venture capitalists, is recycled towards new ventures. These findings are of the essence because several studies - e.g., Repullo and Suarez (1998) and Black and Gilson (1998) - have shown that venture capitalists' financial and non-financial contributions are complementary to each other. In other words, the recycling of venture capitalists' non-financial contribution requires the recycling of their financial contribution as well. Hence the factors that facilitate exits also contribute to the flow of capital - both financial and non-financial - towards new firms (Kanniainen and Keuschnigg, 2001).

The timing of the exit and the choice of exit vehicle are, however, not without governance problems of their own (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001). Quite like fundraising and investing, exiting is affected by the constraints that the finite lifetime of the venture capital fund imposes, by agency considerations and incentive

problems, asymmetric information issues as well as by overall market conditions. These factors will be dealt with in more detail when we look at cross-border exits (2.3).

2.1.4. SUMMARY OF THE ISSUES RELATED TO THE VENTURE CAPITAL CYCLE

Table 2-1 summarizes the discussion on the venture capital cycle. The phenomenon discussed, the literature relating to it, and the implications for ventures, venture capitalists, and, society, are all presented.

Table 2-1. Implications of the findings regarding the venture capital cycle (Abbreviations: VC=venture capital; VCs=venture capitalists; IPO=initial public offering; M&A=merger and acquisition).

		Implications for		
Phenomenon	Literature	Ventures	Venture capitalists	Society
Exits are VCs primary mechanism for earning returns and signaling quality	Ali-Yrkkö, Hyytinen, and, Liukkonen (2001); Black and Gilson (1998); Gompers (1996); Jeng and Wells (2000)	Firms with characteristics (age, industry, risk, etc.) that enable exits will be preferred. A VCs maturity will affect when she wishes to exit.	Investments that enable exits are preferred. Successful exits must be sought after where they can be found to ensure subsequent fundraising. Less experienced VCs are eager to exit to prove quality.	VC funding will decrease if exit opportunities are insufficient. VC funding will focus on firms with characteristics (age, industry, risk, etc) that enable exits.
IPOs and M&As are imperfect substitutes	Berglöf (1994); Black and Gilson (1998); Jeng and Wells (2000); Schwienbacher (2001)	Highly innovative firms are more likely to go public than others. Control can be returned to the entrepreneur only through an IPO.	Firm innovativeness affects exit type likeliness. IPOs give benchmark prices for M&As, i.e. ultimately set price levels.	IPO activity ultimately determines venture capital activity.
VCs financial and non-financial contributions are linked	Black and Gilson (1998) Kanniainen and Keuschnigg (2001); Michelacci and Suarez (2001); Repullo and Suarez (1998)	The value of VCs non-financial contributions, i.e. their ability to help develop ventures, declines as the ventures mature and thus other, cheaper, sources of capital become preferable.	As the value of the non-financial contributions, i.e. the ability to help develop ventures, declines as ventures mature investments should be exited and funds should be reinvested to maximize returns.	Good exit possibilities enable the recycling of VCs financial, and simultaneously non-financial, capital.

2.2. THE INTERNATIONALIZATION OF HIGH-TECHNOLOGY VENTURES

On a general level, firm internationalization refers to the process of increasing a firm's involvement in international operations (Carmel and de Fontenay, 2001). In some cases firms can even de-nationalize, or rather re-nationalize, if most or all of the core functions are moved to a different country. More generally, de-nationalizing implies

gradually losing the characteristics that determine the original nationality (Carmel and de Fontenay, 2001). Internationalization can be demand or supply driven. Supply driven internationalization entails firms seeking resources abroad, such as access to science and technology. Demand driven internationalization involves expanding ones market geographically due to a need for a larger market. Demand factors often fuel internationalization of high-technology firms in small industrialized nations, e.g. the Nordic countries, Israel, and the Netherlands (Carmel and de Fontenay, 2001). This is because small markets do not enable enterprises to recoup high and rising R&D costs, particularly as product life cycles shorten and competition increases. As a result R&D intensive firms from small home countries need export outlets and outward foreign direct investments. This internationalization of technology from domestic firms in small countries should not be considered a weakness in the national innovation systems, but rather a logical consequence of being small (van Beers, 2003).

During the 1990s a new theory explaining the mechanisms of firm internationalization, termed the international new venture approach, was developed. This theory focuses on so called international new ventures (Oviatt and McDougall, 1994) or born globals (Rennie, 1993). These terms refer to firms that from inception seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries (Oviatt and McDougall, 1994) or more simply to firms that from their outset view the world as their market (Rennie, 1993). According to the theory, the key to success for born global firms is private knowledge which is used to achieve differentiation or cost advantages (Oviatt and McDougall, 1994). It is usually small high-technology firms, whose firm-specific advantages lie in innovations and technological breakthroughs, which are born global (Oviatt and McDougall, 1994).

The fuel of born global firms is the entrepreneurial spirit of the founder (Rennie, 1993). These individuals are characterized as being better at combining resources from different countries than others because of competencies they have developed previously (McDougall, Shane, and Oviatt, 1994). More often than not, they are serial entrepreneurs. The driving forces of born global firms are the inability of the often narrow market for a technology in a single country to profitably support the firm (Preece, Miles, and Baetz, 1999), high R&D costs that necessitate rapid growth if they

are to be recouped (Preece, Miles, and Baetz, 1999), and the threat of imitation which means that rapid internationalization is needed to capture the first mover advantages (Rennie, 1993).

The actual success of born globals is dependent on so called learning advantages of newness (Autio, Sapienza, and Almeida, 2000). The advantage stems from the fact that as firms get older they simultaneously develop learning impediments that make it harder for them to internationalize. Thus, firms that are born global are successful, not despite of their young age, but because of it. This is because born global firms have an ability to learn, adapt, and innovate in new and dynamic environments and consequently to outpace older, more developed, companies.

2.2.1. THE IMPORTANCE OF COMPLEMENTARY ASSETS

Nowadays, small but developed countries are squeezed between two developments. Namely, these developments are the growing complexity of new core technologies and the fact that newly industrialized countries - China and India to name a few – increasingly dominate in low- and medium technology products. Add to this the fact that small developed countries, due to limited resources, cannot develop an extensive R&D network and the problems start mounting. The way out of this squeeze, argues van Beers (2003), is to make optimal use of the increased internationalization of technology. In practice this means that high-technology firms should tap into complementary assets on a global scale, i.e. locate themselves wherever the complementary assets are optimal for their future development.

Research on technology innovation has long since acknowledged the importance of complementary assets – e.g. brand, distribution networks, and complementary products – as a prerequisite for commercializing innovations (Maula, Salmenkaita, and Uusitalo, 2004). If the complementary assets are lacking even very strong innovations may turn out to be moderate successes. On the other hand complementary assets may be what distinguish success from failure in a global, technology wise even, competition. It has, for example, been shown that access to existing clinical trial infrastructures and distribution channels are absolutely instrumental for the success of emerging

pharmaceutical biotechnology firms (The Boston Consulting Group, 2002). The reason for this is that whereas small entrepreneurial biotechnology firms usually possess a pool of bright young scientists, technological expertise in specific fields, and close links with universities they lack the scale and engineering advantages as well as financial and marketing expertise of mature pharmaceutical companies (Forrest and Martin, 1992). Puttonen (2004) adds to this discussion when he notes that the value of small R&D intensive firms increases as they become part of global companies with well functioning distribution channels and a competent management. The reason for this is that the fruits of a small firm's R&D can be maximized by tapping into the value of a well known brand and a global distribution network.

Laamanen (1997) studied complementary assets in more detail and found that as technologies mature, their importance increases. The reason is that as competition increases large investments in developing distribution channels become necessary. As technology based firms rarely have the needed resources, becoming part of a bigger entity becomes a viable alternative. In these mergers or acquisitions the technology based firms can provide new technologies and products whereas the large established companies can provide the necessary resources, including distribution channels, for the commercialization of the technologies. On the other hand, firms functioning on local markets in low value adding industries have little to gain or offer such relationships and are thus rarely involved in corporate mergers or acquisition including international companies (Puttonen, 2004).

The significance of complementary assets to emerging high-technology firms' means that also the mechanisms through which they gain access to these assets are important. The network perspective sheds light on these mechanisms.

The Network Perspective

The network perspective on new venture internationalization, which stems from the resource dependence view (Pfeffer and Salancik, 1978), studies how a firm's relationships, i.e. network affiliations, affect the selection of location and how

internationalization is executed (Andersen and Buvik, 2002; Johanson and Mattsson, 1988).

The resource dependence view states that firms are dependent on externally controlled resources for their survival. Firms gain access to these resources by employing network affiliations. Employing networks, of course, requires establishing those networks first. The network model of internationalization ties these facts together when it concludes that the force driving internationalization is the desire to use and develop resources so as to serve the long-term economic objectives of the firm. This is done by creating and using relationships. The model consequently describes industrial markets as networks of relationships that span firms (Mäkelä and Maula, 2004b). In this context internationalization consist of the activities involved with building new relationships, restructuring old but useful ones, and exiting unnecessary ones so that the firm gains access to desirable partners located in foreign markets (Johanson and Mattsson, 1988).

The importance of these results is confirmed by the findings of several studies that the personal contact networks of founders and employees form the basis around which a young firm develops its exchange relationships (Aldrich and Zimmer, 1986; Birley, 1985; Steier and Greenwood, 1995). Especially the managers' external ties are used to form alliances and to obtain information about what behavior is acceptable in foreign markets (Coleman, 1990; Eisenhardt and Schoonhoven, 1996; Geletkanycz and Hambrick, 1997; Nahapiet and Ghoshal, 1998). In more practical terms this means using personal contacts in foreign markets to obtain advice, to identify new business opportunities, and to obtain assistance in foreign negotiations (McDougall, Shane, and Oviatt, 1994).

The tie between the geographical preferences of the entrepreneur and the management team of a venture and the international activities of that venture seem to be stronger than this (Hursti and Maula, 2002). Research on the influence of the international experience of the top management team on internationalization of the venture has found that past experience and contacts are likely to be a major determinant in the opinions of managers. More specifically, Bloodgood, Sapienza, and Almeida (1996) as well as Burgel and Murray (1998) show that the foreign work experience of the managers and the degree and targets of a new venture's internationalization are strongly

correlated. Furthermore, Burgel and Murray (1998) demonstrate that managers of firms that internationalize are more likely to have worked for a foreign firm at home than the managers of similar firms that do not internationalize.

2.2.2. THE ROLE OF VENTURE CAPITAL INVESTORS IN INTERNATIONALIZATION

Although venture capitalists involvement in foreign exits will be discussed in more detail in subsequent chapters it seems warranted saying a few words about their role in the internationalization of emerging firms in general. The reason for this is that, as mentioned, venture capitalists have been shown to provide their portfolio firms with important value added above the money they provide (e.g. MacMillan, Kulow, and Khoylian 1989; Sapienza, Manigart, and Vermier 1996).

Venture capital is inherently a local business as it requires extensive ex ante due diligence and thus detailed knowledge of the firms and markets one intends to invest in. Therefore it is no surprise that venture capitalists typically invest in firms that are physically close to them (e.g. Hursti and Maula, 2002; Sorenson and Stuart, 2001). In doing this, venture capitalists work as producers of information – in other words agents - and thus certify the quality of the ventures they finally invest in (Fried and Hisrich 1994; Megginson and Weiss, 1991). The certification makes it possible for local venture capitalists to provide support for internationalization by arranging syndicates including foreign venture capitalists. Before this can happen, domestic venture capitalists can also help the ventures in their portfolio by improving their cross-border investment readiness. This can be done by guaranteeing that the organizational structures, legal matters and other relevant issues are in the shape required by foreign investors (Cardwell and Maula, 2004).

In the emergence of cross-border venture capital syndicates, local venture capitalists often enter the venture first, followed by co-investments from foreign venture capital investors in later rounds (Mäkelä and Maula 2004a). For the domestic venture capitalists to attract these international venture capitalists, and for the value of the portfolio firms to be maximized, it is critical that the domestic venture capitalists have built syndications of trusted relationships with foreign investors (Cardwell and Maula, 2004).

In this process the credibility of the local venture capital investors is of high importance. The importance of trust in the local venture capitalists is increased by the fact that once the syndicate is up and running they are responsible for managing it.

Once the foreign venture capitalists have been attracted, they can open doors and improve the credibility of their portfolio firms and thus help them in establishing operations in foreign markets. On a more tangible level this involves help in recruiting, bringing customers, opening doors to business partners, knowledge of the legal environment, and providing contacts to financiers (Mäkelä and Maula, 2004a). In addition to this foreign venture capitalists can also stimulate the supply of domestic venture capital by opening up new exit opportunities abroad. The interests of domestic and foreign venture capitalists are, thus, interrelated.

In the light of the above mentioned findings it is not surprising that Mäkelä and Maula (2004b) discover that firms are likely to develop into having an institutionalized position in the geographical area from which they have received cross-border venture capital. The mechanism seems to be coercive isomorphism which occurs when the choice made by one organization results from the more or less explicit pressures exerted by another organization from which its resources depend (DiMaggio and Powell, 1983). The outcome of this phenomenon may be positive or negative depending on whether the cross-border venture capitalists are located in the internationalization target markets of their portfolio firms. If this is the case, the cross-border investors' presence and actions will lead to decreased liabilities of foreignness of the portfolio firms and will thus have a positive impact (Mäkelä and Maula, 2004b). The fact that cross-border venture capital investors tend to drive their portfolio firms towards their home markets means that the benefits may turn into disadvantages if the internationalization target market of the portfolio firm differs from the home markets of the cross-border investors. This is because interacting with foreign venture capitalists brings about relatively high transaction costs (Williamson, 1975, 1979) which cannot be justified if the venture capitalists cannot provide help in functioning on the international target markets of the portfolio firm (Mäkelä and Maula, 2004b).

2.2.3. THE LOCATION OF CORE FUNCTIONS

A subject that raises controversy is where internationalizing firms locate their core functions. Although the subject is often debated, it is rarely researched. However, it seems evident that the factors discussed so far – namely market requirements, complementary assets, networks, and venture capitalist involvement – are the factors that affect the location of functions.

In one of the few studies conducted, Carmel and de Fontenay (2001) examine where internationalizing Israeli high-technology firms place different functions. They find that most internationalizing firms move many functions in part, or in full, to their principal market. Functions that are likely to move – in order of likeliness - are sales, marketing, legal residence, executive power (President, CEO, CFO, etc.), and technical support and adaptation units. On the other hand little R&D is relocated; especially 'core' R&D remains unmoved. In the few cases where R&D is relocated this is because the needed technical skills are not available in the country of origin. This study thus seems to indicate that the more sales related a function is, the more likely it is to move. R&D, and thus the technical expertise, seems to stay in the country of origin.

The information and communication technology industry, and to an increasing amount the biotechnical industry, are moving their operations to Asia – especially China and India. In practice this means that if emerging firms want to corroborate with global high-technology firms they are to an increasing degree going to have to have physical presence in these areas. This development is driven by the fact that the fastest market growth and the lowest production costs can be found in these countries (Puttonen, 2004). This development is going to lead to a situation where more and more functions will be moved to this area.

2.2.4. SUMMARY OF THE ISSUES RELATED TO INTERNATIONALIZATION

Table 2-2 summarizes the discussion on internationalization. The phenomenon discussed, the literature relating to it, and the implications for ventures, venture capitalists, and society are all presented.

Table 2-2. Implications of the findings regarding internationalization (Abbreviations: VC=venture capital; VCs=venture capitalists; IPO=initial public offering; M&A=merger and acquisition).

Phenomenon	Literature	Implications for		
		Ventures	Venture capitalists	Society
Born global firms	Autio, Sapienza, and Almeida (2000); Carmel and de Fontenay (2001); McDougall, Shane, and Oviatt (1994); Oviatt and McDougall (1994); Preece, Miles, and Baetz (1999); Rennie (1993); van Beers (2003)	The whole world seen as market from day one because high R&D costs, the often narrow market for a technology in a single country, and the threat of imitation mean that the needed investments can not be recouped in small home market.	Possible investment targets due to big upsides and large capital need. Important to develop skills in internationalizing firms and contacts to foreign markets to help portfolio firms internationalize and to maximize own returns.	The internationalization of born global firms should not be seen as a weakness, but a consequence of being small, in small countries.
Importance of complementary assets	Forrest and Martin (1992); Laamanen (1997); Maula, Salmenkaita, and Uusitalo (2004); The Boston Consulting Group (2002); van Beers (2003)	In a competitive world complementary assets are often what distinguish successes from failures. Commercialization of technologies requires access to companies with the needed resources, especially distribution channels.	Contacts to critical resource holders can significantly help portfolio firms and increase their value.	If the complementary assets critical for an industry are lacking in a country firms should be encouraged to seek such assets abroad.
The role of venture capitalists in internationalization	Cardwell and Maula (2004); Mäkelä and Maula (2004a and 2004b); Williamson (1975 and 1979)	Firms usually develop institutionalized positions in their VCs home countries. This has a positive influence if the country is a target market of the firm. Otherwise the impact is negative.	Local VCs must build trusted relations with foreign VCs for syndicates to evolve and for their value to be maximized.	The presence of foreign VCs helps firms to establish operations in foreign markets.
The location of core functions of internationalizing firms	Carmel and de Fontenay (2001)	Many core functions are usually moved to the principal market.	Contacts that help in setting up the international operations should be very helpful for the portfolio firms. Cross-border VCs should be most helpful in this respect.	The fear that the knowledge base of a country evaporates with internationalizing firms seems unwarranted as the core R&D, i.e. the technical expertise, always when possible remains in the country of origin.

2.3. CROSS-BORDER EXITS

Cross-border exits, especially IPOs, are likely to become more common as the venture capital industry in small but developed countries grows and matures. However, cross-

border IPOs are still quite rare and thus it is no surprise that research into cross-border IPOs is also rare. The fact that cross-border IPOs are, at least currently, rarely used raises the question of why this is so. The question is especially interesting from the perspective of the European Union since continuing integration should enhance the flow of capital across borders, i.e. increase cross-border investments.

2.3.1. INITIAL PUBLIC OFFERINGS

Though all IPOs are unique most are pursued to raise financing needed for growth and to make it possible for investors and founders to exit their investment (Hursti and Maula, 2002). More specifically, previous research has identified the following distinct classes of general motivations for IPOs: Capital availability (e.g. Pagano, Panetta and Zingales, 1998), widening the shareholder base and obtaining and controlling liquidity (e.g. Foester and Karolyi, 1999), and signaling quality (e.g. Blass and Yafeh, 1998).

The need for capital availability can clearly be discerned when the firm to be listed has high capital requirements, meaning that the market where the IPO is to take place has to be large enough to absorb the issue and thus to be able to give the money to the issuer. According to Hursti and Maula (2002) this requirement is obvious when considering the dual listings of European firms: The firms that were dually listed in the 1990's were predominantly large teleoperators and other privatizations that needed to tap into several equity markets to gather the amounts of money they needed.

According to Foester and Karolyi (1999), the less developed the home market is, the more a firm should benefit from a foreign dual listing. This is because whereas a foreign listing is associated with a small increase in the global market risk and the foreign exchange risk, it significantly reduces the exposure to domestic market risk. Summed up, a foreign listing should thus reduce the cost of equity capital. Furthermore, cross-border listings have been found to decrease the cost of capital also because of portfolio diversification and stricter demands on corporate governance (Stulz, 1999). Cross-border listings have also been found to increase liquidity due to a wider investor base (Karolyi, 1996; Foester and Karolyi, 1999).

Signaling effects of IPOs are especially relevant in foreign listings as there are relatively large differences between disclosure requirements between exchanges. Stringent listing and disclosure requirements - especially in terms of accounting disclosure - generate a major cost for firms but are also argued to benefit the firms (Hursti and Maula, 2002). The reasons for this are that transparency is argued to lower the cost of capital and that strict listing requirements are argued to give rise to a certification effect (Saudagaran and Biddle, 1992). Furthering this line of thought Blass and Yafeh (1998) put forward that Israeli high-technology firms prefer listing on NASDAQ over the local exchange because it distinguishes them from lower quality firms. The underlying reason for the presented signaling effects is a phenomenon that has been entitled information asymmetry.

Information Asymmetry

The difficulty of distinguishing good quality from bad is inherent in the business world. In other words, it is hard for the purchaser to identify quality (Akerlof, 1970). This is because the purchaser's information is less than complete and because attaining information is costly. An example of this phenomenon, discovered by Chemmanur and Fulghieri (1999), is that the older the firm, the more likely it is to go public. The reason for this is simply that the older the firm, the more likely it is to be known and followed in the market which reduces the cost of evaluation. Using a similar line of thought Subrahmanyam and Titman (1999) assert that, other things being equal, larger markets with more similar firms already listed make information asymmetries less important because of lower costs of information transfer. The underlying thought is that in a large market, analysts are more likely to acquire information by luck or with no cost. The benefits of lowering the cost of information should be higher the larger the market is and the more difficult it is to analyze the firms.

The younger the firm and the more exotic the industry it operates in the bigger is the information gap between the firm and potential investors and thus the harder it is to analyze. As a result it may be beneficial for high-technology firms to find an investor base familiar with their industry when they go public. This is many times reported as the reason for an overseas listing (Hursti and Maula, 2002). In accordance with this theory

Pagano, Röell and Zechner (1999) find that R&D intensive firms are more likely to make cross-border listings than other firms.

2.3.2. TRADE SALES

As has been discussed, a well-functioning financial market and, in particular, an active market for initial public offerings (IPOs) create a steady flow of opportunities to exit. However, another important exit route also exists in the form of trade sales of portfolio firms. A trade sale implies that the portfolio firm is sold, as a whole, to another company. Trade sales are executed using mergers and acquisitions. The same requirements that can be put forward as requirements for an efficient stock market – i.e. high levels of activity and liquidity - also apply to the merger and acquisition market. In particular, as Ali-Yrkkö, Hyytinen, and Liukkonen, (2001) note, the merger and acquisition market should provide a constant flow of opportunities to sell firms to industrial buyers that are large enough, i.e. have the resources required for the acquisition. In other words this means that the buyers have to be large enough to possess the monetary means to compensate the entrepreneur and the venture capitalist(s) for their investment.

However, the acquiring companies must also be active in industries such that the portfolio firms of the venture capitalists are of interest to them. In general the smaller the country, the less domestic industrial buyers it can hold. Furthermore, less companies in a geographically constrained area also leads to less diversification among the companies. This means that in smaller countries foreign industrial buyers are likely to be required if matching is to take place (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001).

Trade sales, not least due to the contracting over control issues discussed previously, are often considered inferior to initial public offerings. However, they are important for the venture capital cycle because they can broaden the type of investments that venture capitalists are willing to make by providing an alternative exit route. Furthermore, trade sales are sometimes proposed to be less dependent on macroeconomic conditions and would thus be able to provide alternative exit routes when initial public offerings are out of the question (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001). As the latest point reveals,

the distribution, not only the average level of stock market and merger and acquisition activity, matter for the exit opportunities venture capitalists have at their disposal. This leads us to the phenomenon of volatility.

Volatility

New listings and the pricing of IPOs are surrounded by considerable uncertainty. IPO cycles have been found to be strong in many countries indicating that periods of high IPO activity are likely to be followed by further IPO activity whereas periods of low IPO activity are likely to be followed by periods of minor IPO activity. The reasons for the clustering are not well understood (Jenkinson and Ljungqvist, 2001). In volatile market conditions exiting becomes more difficult and the overhang of portfolio firms waiting the exit may increase (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001). Different markets are affected differently by market turbulence but the general mechanism is that too much overhang translates into lower returns which in turn affect the venture capital activity negatively. Due to lower sector diversification small economies and their financial systems tend to be more prone to suffer from macroeconomic volatility than larger ones.

Mergers and acquisitions seem, according to international evidence, to be dependent on so called merger waves (Weston, Kwang, and Siu, 1998). The reasons for the waves are not well understood, but the evidence suggests that the waves are different in terms of industry composition and thus that they might result from industry-level shocks – for example deregulation (Ali-Yrkkö, Hyytinen, and Liukkonen, 2001). A volatile merger and acquisition market is problematic for venture capitalists as it means that not only the IPO, but also the market for trade sales, is dependent on macroeconomic cycles.

If the macroeconomic trends in different countries do not coincide this leads to a situation where foreign exits may be pursued simply because another market may temporarily be 'hotter' than the domestic one and thus be able to provide a better price. In line with this Lerner (1994) shows – by studying venture-backed biotechnology firms - that venture capitalists are able to systematically predict and utilize hot periods in different countries for exit.

2.3.3. THE IMPACT OF THE VENTURE CAPITALISTS' HOME COUNTRY ON EXIT LOCATION

Cross-border venture capitalists have been shown to perform important functions in several markets with a lot of growth oriented high-technology firms but a limited supply of domestic capital (Baygan and Freudenberg, 2000; OECD, 2001 and 2002; Bassolino, 2002; Dossani and Kenney, 2002; Kenney, Han and Tanaka, 2002; Mayer, Schoors and Yafeh, 2002). The role that these cross-border venture capitalists play in the exit phase of venture capital backed firms deserves special attention, as Pagano, Röell, and Zechner (1999) have found that cross-border listings are culturally dependent. In other words, firms tend to cross-list in countries geographically or culturally close to their country of origin. As this behavior probably extends to investors as well as managers, one can assume that foreign investors have a bias towards their own country of incorporation.

In line with this assumption Hursti and Maula (2002) find that an increasing number of stock exchange listed firms have made their initial public offerings in foreign markets. This is done, in addition to circumventing constraints in the availability of capital, because the foreign pre-IPO investors strongly favor and push for foreign initial public offerings. The authors explain this trend with the following facts:

- The previously discussed 'born global' firms tend to seek international contact from the beginning of their existence.
- Venture capitalists, as mentioned, tend to be home biased.
- Cross-border venture capitalists provide a certification effect on their local public markets.

The last point warrants further elaboration as the underpricing of venture-backed IPOs has been found to be lower than for other IPOs as a consequence of the monitoring role done by the venture capitalists (Barry, Muscarella, Peavy, and Vetsuypens, 1990). The fact that venture capital is, in essence, a local business furthermore means that the certification that a venture capitalist can provide is stronger if she is local. This is

because the local market prefers firms backed by local venture capitalists since local investors know these organizations better. The conclusion that can be drawn is that if a firm is to go through with a foreign IPO the likelihood of success and of receiving a fair price are better if the firm is affiliated with a venture capitalist based in that country.

As was previously discussed the supply of venture capital is largely determined by the exit possibilities and the returns they offer. More specifically, venture capital flows seem to be strongly correlated with the strength of the IPO market and the size of the stock market. Milhaupt (1997), Black and Gilson (1998), and Jeng and Wells (2000) have all demonstrated that IPOs are one of the main drivers of venture capital flows - both investments and fundraising - over time and across countries. Against this background it can be concluded that for the venture capital market to work efficiently a liquid stock market has to be in place. In this context the effect of pre-exit financing on exit location can be interpreted as foreign venture capitalists opening up new, foreign, exit opportunities in response to illiquid or inefficient domestic exit markets.

2.3.4. SUMMARY OF THE ISSUES RELATED TO CROSS-BORDER EXITS

Table 2-3 summarizes the discussion on cross-border exits. The phenomenon discussed, the literature relating to it, and the implications for ventures, venture capitalists, and society are all presented.

Table 2-3. Implications of the findings regarding cross-border exits (Abbreviations: VC=venture capital; VCs=venture capitalists; IPO=initial public offering; M&A=merger and acquisition).

		Implications for		
Phenomenon	Literature	Ventures	Venture capitalists	Society
Disadvantages of a less developed home stock market	Foester and Karolyi (1999); Karolyi (1996); Pagano, Panetta, and Zingales (1998); Stulz (1999)	Cross-border IPOs have been found to reduce the equity cost of capital.	The better capital availability that can be achieved through cross-border IPOs enables exiting.	Firms that can raise capital at more favorable terms, or at all, abroad should be allowed to do so.
Information asymmetry problems due to small and undiversifie d home stock markets	Hursti and Maula (2002); Pagano, Röell, and Zechner (1999); Subrahmanyam and Titman (1999)	Larger markets with similar firms already listed reduce information asymmetries, i.e. benefit similar firms that pursue an IPO.	It is beneficial for the owners of a firm to find an investor base familiar with the industry when an IPO is pursued. Cross-border listings work well for this purpose.	R&D intensive firms are more likely to make cross-border IPOs than other firms.

Disadvantages of a less diversified or illiquid M&A market	Ali-Yrkkö, Hyytinen, and, Liukkonen (2001)	Small countries hold fewer buyers than larger ones. These buyers are also concentrated to few industries.	Small countries hold few buyers in most industries that are large enough to compensate the entrepreneur and the VCs for their investment.	In small countries foreign industrial buyers are required if matching is to take place as companies with the required size active in the relevant industries are rare.
Volatility of the IPO and the M&A market	Ali-Yrkkö, Hyytinen, and, Liukkonen (2001); Jenkinson and Ljungqvist (2001); Lerner (1994); Weston, Kwang, and Siu (1998)	The exit route may differ from the planned due to macroeconomic cycles.	Overhang in firms waiting for an exit translates into lower returns. Exit timing may be hard to plan.	Small economies are more prone to suffer from macroeconomic cycles than larger ones due to lower sector diversification. If macroeconomic cycles do not coincide foreign exits are pursued simply because other markets are temporarily 'hotter'.
Cross-border VCs favor exits to their own markets	Barry, Muscarella, Peavy, and Vetsuypens (1990); Hursti and Maula (2002); Pagano, Röell, and Zechner (1999)	Firms receive a better exit price if they are backed by VCs from the exit country.	If a cross-border exit is planned local VCs should attract cross-border VCs from the country the exit is to take place in because of the certification effect they provide.	Foreign VCs favor exits to their own home markets which means that more foreign venture capital is likely to lead to more foreign exits.

3. DESCRIPTIVE ANALYSIS

In this chapter the effect market characteristics, foreign ownership, venture capitalists and their exit possibilities have on Finnish emerging firms will be discussed. The chapter concludes with a summary.

3.1. FINNISH HIGH-TECHNOLOGY MARKET CHARACTERISTICS

A fact that Finnish high-technology firms have to accept is that the main markets for their products are often geographically distant. This leads to problems in getting products to market which can be seen as constant problems among Finnish emerging firms in selling their technologies and products. According to Maula, Salmenkaita, and Uusitalo (2004) a major reason for this is that the 'technology policy' in Finland has focused too much on the domestic market and the international markets have had a secondary position. This is clearly not an optimal starting point for firms that are born global, i.e. whose markets are global from day one. A good benchmark for Finland is Israel. The Israeli 'technology policy' is focused on increasing the internationalization of the firms especially in terms of research and sales collaboration and by attracting foreign venture capitalists (Carmel and de Fontenay, 2001). As was already mentioned, this has not lead to the transferring of R&D functions from Israel.

In the long run the question becomes if Finland wants to produce new internationally successful firms that most likely require an international owner base or if we want to concentrate on protecting the few global successes we have created so far. Puttonen (2004) at least partially gives direction for what the answer should be when he states that the global economy is with us every day: To keep in pace with the world economy our own economy needs to grow and develop continuously.

3.2. THE EFFECT OF FOREIGN OWNERSHIP ON FINNISH FIRMS

In a study conducted by Ylä-Anttila, Ali-Yrkkö, and Nyberg (2004) the return on investment (ROI), economic value added (EVA), and investments as a percentage of sales for the 100 biggest Finnish companies were measured for the years 1986-1998 and categorized according to ownership. The results can be seen in Table 3-1.

Table 3-1. ROI, EVA, and investments/sales of the 100 biggest Finnish companies 1986-1998 depending on ownership (Adopted from Ylä-Anttila, Ali-Yrkkö, and Nyberg, 2004).

	Finnish ownership	Foreign ownership
Return on investment (ROI)	6%	18%
Economic value added (EVA)	1%	6%
Investments/Sales	10%	5%

The results, which are statistically significant, speak for themselves. The profitability of Finnish firms is better under foreign ownership. According to the authors this is due to the fact that the companies gain access to their foreign owners' global distribution networks and competent management. On the negative side R&D activities seem to decrease in companies with foreign ownership.

As these results were attained while studying big companies they are not directly transferable to the domain of emerging high-technology firms studied here. However, the results go to show that foreign ownership is in general mostly a positive phenomenon for Finnish companies.

3.3. THE FINNISH VENTURE CAPITAL MARKET

Despite the growth in recent years, the Finnish venture capital market has not reached the scale of fundraising and investment activity that the country's GDP predicts when compared to other Eurpean countries (Hyytinen and Pajarinen, 2001). Furthermore, the venture capital cycle is distorted towards fundraising and investing when compared to the stage of the average European venture capital cycle. In other words, the amount of funds raised, investments, and exits are not in balance relative to each other when benchmarked to the corresponding European levels; the Finnish venture capital industry is at an earlier stage of the cycle. These results by Hyytinen and Pajarinen (2001) suggest that as the Finnish venture capital industry matures the need for promising exit opportunities is going to increase.

When it comes to cross-border venture capital Finland seems to be well represented. In a study conducted by Baygan and Freudenberg (2000) Finland ranked third when the share of invested venture capital contributed by cross-border venture capitalists was measured in the OECD countries – only in Ireland and Denmark was the share of

cross-border venture capital greater. Furthermore, according to the same authors, 43% of all investments made in Finland in 1999 were foreign investments. Against this background it is not at all surprising that many of the largest rounds of venture capital investments made into Finnish high-technology ventures have involved cross-border venture capitalists (Mäkelä and Maula, 2004a).

As has been concluded earlier many venture-backed firms generate little, if any, cash flow. This means that exiting is critical to ensuring attractive returns. Investors' incentives to invest therefore depend on how profitably venture capitalists can exit their portfolio firms.

In recent years the importance of venture capitalists as a source for funding for emerging high-technology firms has increased in Finland (Niemi, 2003). Consequently, the importance of a well functioning exit market has also increased. However, the Helsinki stock exchange cannot be seen as a reliable enough exit alternative for venture capitalists due to its volatility (Ali-Yrkkö, Hyytinen ja Liukkonen, 2001; Niemi, 2003). The reason for this is that the IPOs on the Helsinki stock exchange have been concentrated to a few periods, as can be seen in Figure 3-1.

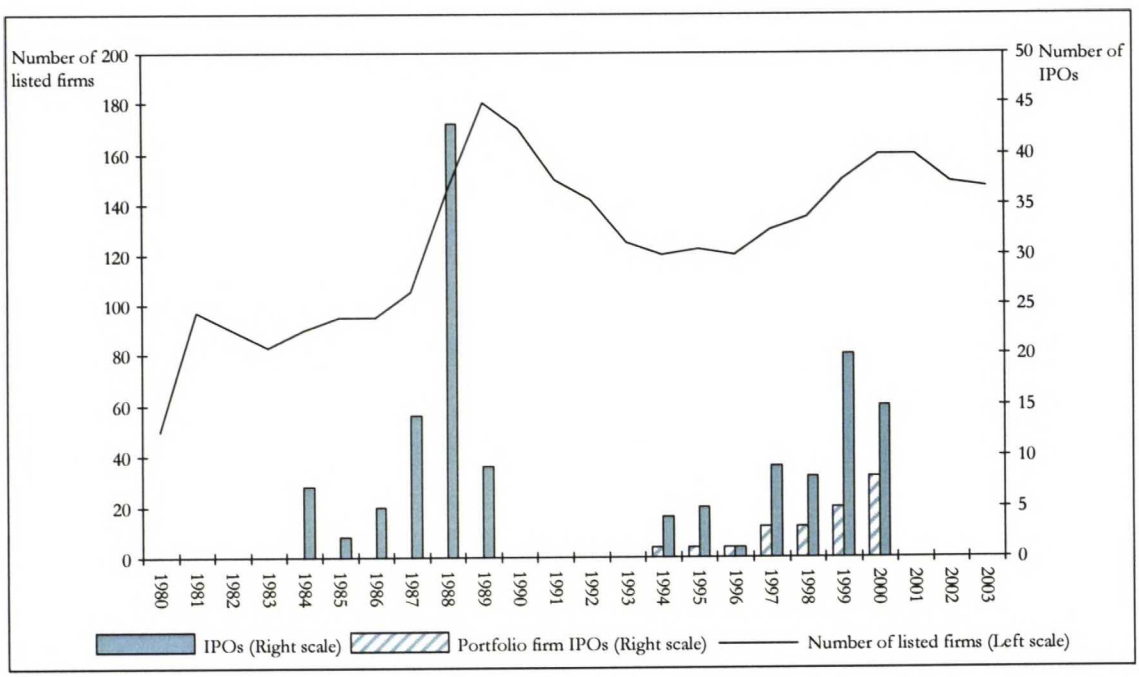

Figure 3-1. Initial public offerings and the total number of listed firms on the Helsinki stock exchange, 1980-2003 (Adopted from Ali-Yrkkö, Hyytinen, and Liukkonen

(2001), Keloharju (1993), the Helsinki Stock Exchange (various yearbooks), and the Finnish Venture Capital Association (various annual publications)).

In 1988 there was over 40 IPOs whereas zero IPOs took place between 1990 and 1993. Venture-backed IPOs entered the stage in 1994. Before the upsurge in 1999 there were less than ten new listings a year. Between 2001 and 2004 no new firm have been listed on the Helsinki stock exchange.

The number of mergers and acquisitions in Finland can be seen in Figure 3-2. When Ali-Yrkkö, Hyytinen, and Liukkonen (2001) compared these figures to other European countries they were able to conclude that the Finnish merger and acquisition market is among the most active when compared to GDP.

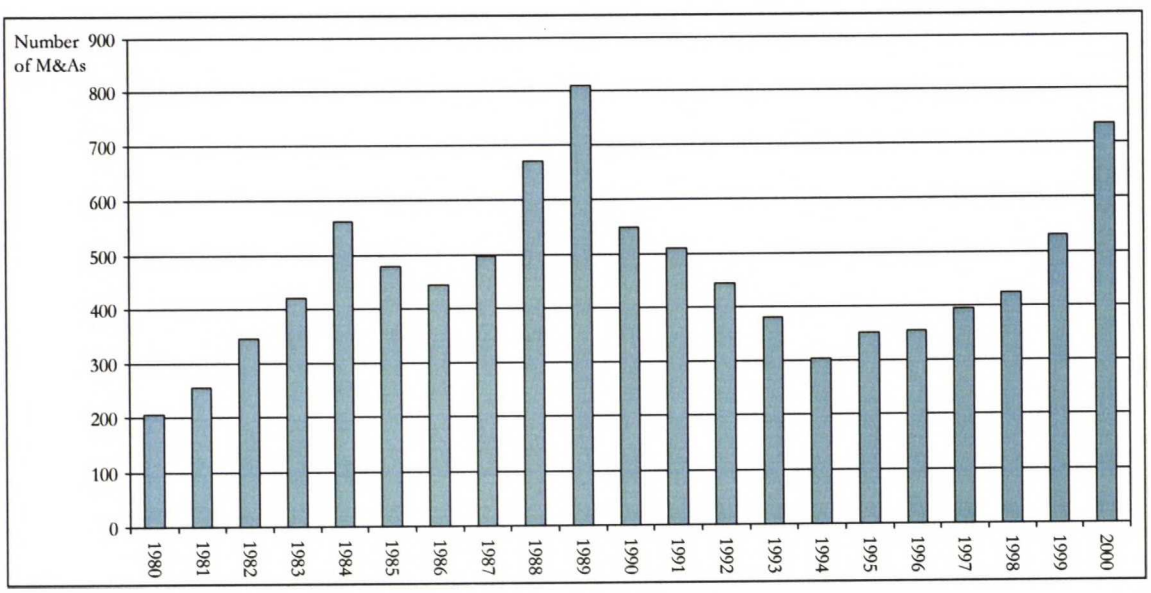

Figure 3-2 Number of mergers and acquisitions in Finland, 1980-2000 (Adopted from Ali-Yrkkö, Hyytinen, and Liukkonen (2001), the Talouselämä-magazine and the Research Institute of the Finnish Economy).

Ali-Yrkkö, Hyytinen, and Liukkonen (2001) also compared the figures in Figure 3-1 and Figure 3-2 and found that the IPO and the merger and acquisition activity have decreased during the 1990s relative to the activity in the 1980s. Not surprisingly, the IPOs have been more volatile than mergers and acquisitions. Furthermore, the correlation between IPOs and mergers and acquisitions is high (coefficient of

correlation = 0.59). Thus, even though the Finnish merger and acquisition market appears to be active by international standards, trade sales serve at best only as an imperfect substitute for IPOs as they seem to follow the same macroeconomic trends.

Figure 3-3 shows the number of domestic and foreign IPOs made by Finnish portfolio firms. As can be seen the exit market gained speed in 1997 powered both by domestic and foreign listings. The domestic listings, however, lost their position in 2001 and are yet to return. These findings give no reason to believe that the conclusion made based on all domestic IPOs would not apply in the domain of IPOs of venture capital-backed firms. That is, the Helsinki stock exchange cannot be seen as a reliable enough sole exit alternative for venture capitalists due to its volatility.

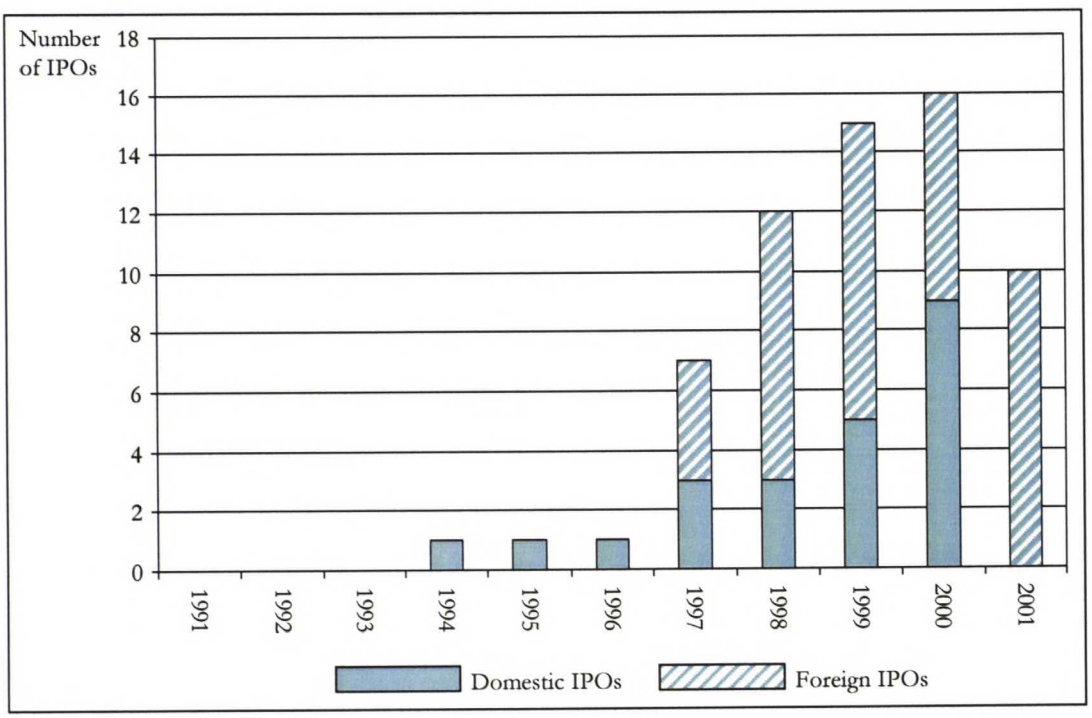

Figure 3-3 Number of domestic and foreign IPOs made by Finnish portfolio firms 1991-2001 (Adopted from Keloharju (1993), Puttonen (2004), the Helsinki Stock Exchange (various yearbooks), the Finnish Venture Capital Association (various annual publications), and the Research Institute of the Finnish Economy).

In addition to the volatility and clustering on the Finnish stock market it is also very illiquid. In practice this means that buying a bigger stake - defined as a stake worth at least 10 million euros – in a company on the Helsinki stock exchange without

influencing the value of the company takes weeks for all but the most traded companies (Goldman Sachs, 2005). In practice this means that small and medium sized firms noted on the Helsinki stock exchange do not even show up on the lists of possible investments of international investors. This is said to have been the main reason for some Finnish biotechnical firms to list abroad (e.g. Hulkko, 2005). The underlying logic is that the value of firms is usually higher the more liquid the share is.

Figure 3-4 shows the number of trade sales of Finnish portfolio firms. Unfortunately the Finnish venture capital association does not document if exits are domestic or foreign and thus it is impossible to say what proportion of these firms are sold abroad. However, many scholars have put forward that the proportion of firms sold abroad is likely to be substantial (e.g. Puttonen, 2004).

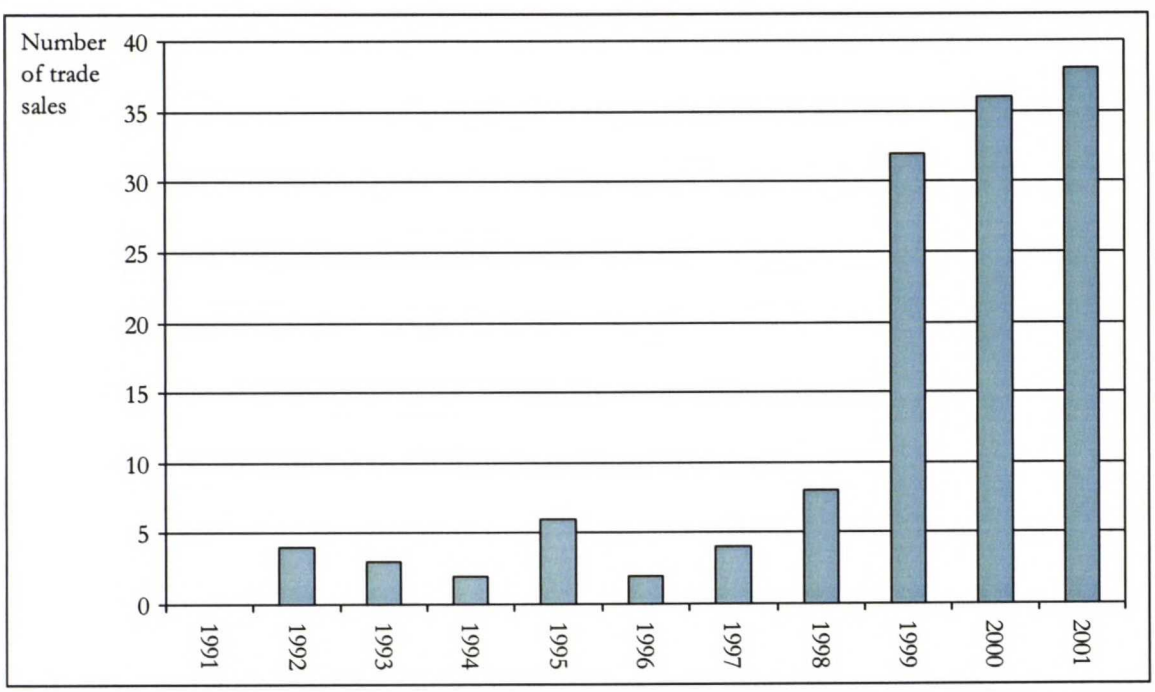

Figure 3-4. Number of trade sales of Finnish portfolio firms 1991-2001 (Adopted from Puttonen (2004) and the Research Institute of the Finnish Economy).

It can be concluded that the trade sale market gains speed roughly at the same time as the IPO market (1997) but does not collapse in 2001. As Finland is the target for a lot of inward cross-border deals, second most in Europe relative to GDP according to Ali-

Yrkkö, Hyytinen, and Liukkonen (2001), one can only assume that also many of the venture-backed firms are sold abroad.

3.4. SUMMARY OF THE DESCRIPTIVE ANALYSIS

The above mentioned facts suggest that the Finnish exit market is less than optimal. First of all, there is heavy clustering and volatility on the stock market. This means that IPOs become hard to plan and foresee. Furthermore, it can also lead to lower market capitalizations and proceeds in times when firms can go public if an overhang in the amount of portfolio firms waiting to go public has been built up. In addition to this the illiquidity of the Helsinki stock exchange means that international investors in practice ignore Finnish small and medium sized firms listed on it. The merger and acquisition market, although it seems to be lively, cannot compensate for the shortcomings of the stock market since it is strongly correlated with the trends of the IPO market. The long-run prospects of trade sale exits may also be undermined by the inability of domestic buyers to absorb the emerging high-technology firms that venture capitalists focus on. The reason for this is the limited size of the Finnish domestic economy and particularly the absence of large mature companies in many of the emerging fields, such as biotechnology.

The solution is not in Finland but in cross-border exits. Given the relatively large amount of cross-border venture capital flowing into Finland, and the role cross-border venture capitalists play in cross-border exits, the prospects for such activity seem promising. In addition, the venture capital exit figures presented also suggest that a majority of the IPO and trade sale exits that Finnish portfolio firms go through are already cross-border.

The Finnish venture capital industry is still immature which means that Finnish venture capitalists have their portfolios full of, hopefully technologically competitive, ventures. Even so, the internationalization of Finnish ventures is slow and many Finnish ventures struggle as they try to take on their foreign, better funded, competitors (Cardwell and Maula, 2004). The emergent nature of the industry in Finland also means that many venture capitalists have limited exit portfolios. This in turn, makes it hard for them to attract investors. As already mentioned the solution lies in further internationalization.

This applies for the venture capital industry as well as for the firms they invest in. Only in this way can the Finnish ventures grow, have successful exits, create attractive financial returns for their investors, and ultimately ensure the functionality of the venture capital industry and thus make certain that the next wave of innovative firms have funding at their disposal.

The purpose of the quantitative study is to examine statistically whether cross-border exits have an impact on the exit performance of European venture capital backed firms. This chapter first develops the model to be used and derives the hypotheses to be tested. Subsequently, the methods used to test the hypotheses are explained, and the results are presented. The chapter closes with the conclusions of the quantitative study.

4.1. MODEL AND HYPOTHESES

To determine the impact of cross-border exits on the exit performance on European venture capital backed firms three topics have to be dealt with in more detail. These topics are:

- The pricing of cross-border exits as compared to domestic ones,
- The effect of venture capitalists on exit performance, and
- How the industry of the firm being exited effects exit performance.

The pricing of cross-border exits refers to the money raised and the value associated with a firm when it is exited. The pricing of firms at exit is critical because it is what makes the venture capital cycle possible as it provides venture capitalists with a mechanism for earning returns and signaling quality (Black and Gilson, 1998; Jeng and Wells, 2000). As the primary exit mechanisms, i.e. IPOs and trade sales are imperfect substitutes both are studied (Berglöf, 1994; Black and Gilson, 1998; Jeng and Wells, 2000; Schwienbacher, 2001). The importance of exits is further highlighted by the fact that the financial and non-financial contributions of venture capitalists are linked (Black and Gilson, 1998; Michelacci and Suarez, 2001; Repullo and Suarez, 1998). Thus the only way to recycle venture capitalists value-added services is to recycle their financial contributions as well (Kanniainen and Keuschnigg, 2001). This takes place through exit and reinvestment.

It has previously been found that firms receive a better exit price if they are backed by venture capitalists and that cross-border venture capitalists favor exits to their own

markets (Barry, Muscarella, Peavy, and Vetsuypens, 1990; Hursti and Maula, 2002). Based on these findings studying the affect venture capitalists from the exit country have on cross-border exit performance seems warranted.

Due to the critical role played by exits in the venture capital cycle venture capitalists prefer investing in firms with characteristics - age, industry, risk, etc. - that enable exits (e.g. Black and Gilson, 1998). If foreign countries provide attractive exit possibilities for firms with characteristics that make them hard to exit in the country of origin this is likely to broaden the types of firms that venture capitalists are willing to invest in. For this reason, the impact the industry of the firm being exited has on exit performance, will be studied. The three topics presented above form the model for the quantitative study. This model can be seen in Figure 4-1.

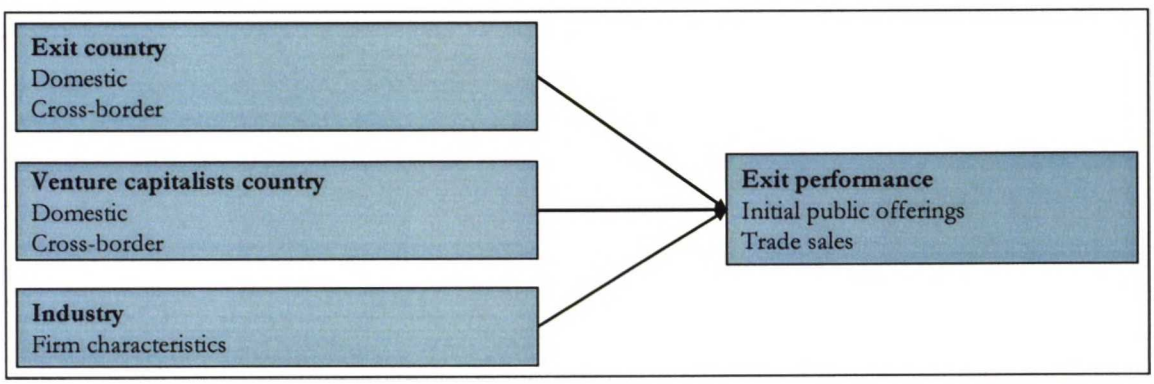

Figure 4-1. The model of the quantitative study.

The hypotheses presented here are mostly derived from the literature study. However, as opinions directly related to the subject are often expressed publicly, e.g. in the press, also some of these opinions are tested to determine their veracity.

The first hypothesis is derived from the 'common knowledge' opinion, often expressed in the press, which states that domestic firms are sold abroad too cheaply (see, for example, Heiskanen, 2003; Lukkari, 2004; Niemi, 2005; STT, 2003; Tammilehto, 2005).

Hypothesis 1: *Domestic firms are, other things being equal, sold at a cheaper price to foreign than to domestic buyers.*

Hypothesis 1 is tested for venture backed firms in general and for non high-technology, information and communication technology, and medical/health/life science venture backed firms specifically.

The second hypothesis is derived from our discussion on venture capital's local nature, certification effects, information asymmetry, and trust related issues. More specifically, it was previously concluded that the certification that a venture capitalist can provide is stronger if she is local because the local market prefers firms backed by local venture capitalists since local investors know these organizations better (Barry, Muscarella, Peavy, and Vetsuypens, 1990; Hursti and Maula, 2002). Specifically, in the case of a cross-border exit the presence and actions of a venture capitalist from the exit country should lead to decreased liabilities of foreignness for the portfolio firm and thus have a positive impact on the performance of the exit (Mäkelä and Maula, 2004b). Hypothesis two stems from these conclusions.

Hypothesis 2a: *Firms backed by venture capitalists – foreign or domestic – from the exit country are, other things being equal, sold at a higher price than firms with no venture capitalist representation in the exit country.*

Hypothesis 2b: *The proceeds of firms affiliated with venture capitalists institutionalized in the same country as the primary exchange where the IPO takes place is positioned are, other things being equal, higher than for firms lacking such affiliations.*

Hypothesis 2c: *The post under-pricing market capitalization of firms affiliated with venture capitalists institutionalized in the same country as the primary exchange where the IPO takes place is positioned are, other things being equal, higher than for firms lacking such affiliations.*

Hypotheses 2a, 2b, and 2c are all tested for venture capital backed exits in general and for venture capital backed cross-border exits specifically.

The third hypothesis is based on our previous discussion on motivations for cross-border IPOs. These motivations, i.e. better capital availability (Pagano, Panetta and Zingales, 1998), reduced exposure to domestic market risk (Foester and Karolyi, 1999),

increased portfolio diversification (Stulz, 1999), the signaling effect of applying to stricter demands on corporate governance (Stulz, 1999), and an increased liquidity due to a wider investor base (Karolyi, 1996; Foester and Karolyi, 1999) should affect the firms' IPO performance positively. Furthermore, reduced information asymmetry, often reported as a reason for foreign listings, should also reduce the equity cost of capital. This is because larger markets with more similar firms already listed make information asymmetries less important because of lower costs of information transfer (Hursti and Maula, 2002; Subrahmanyam and Titman, 1999).

Hypothesis 3a: *The proceeds of cross-border IPOs are, other things being equal, higher than the proceeds of domestic IPOs.*

Hypothesis 3b: *The post under-pricing market capitalizations of cross-border IPOs are, other things being equal, higher than the ones of domestic IPOs.*

Hypotheses 3a and 3b are tested for venture backed firms in general and for information and communication technology as well as medical/health/life science venture backed firms specifically.

4.2. METHODS

This chapter presents the methodology used in the quantitative study. First the data is presented, where after the statistical methods used are described. Finally, the operationalizations of the constructs, i.e. the variables used, are presented.

4.2.1. DATA

The data has been gathered using various databases, namely Thomson Financials SDC Platinum Global New Issues Database, Thomson Financials SDC Platinum Worldwide Mergers Acquisitions & Alliances Database, Thomson Financials SDC Platinum VentureXpert Database, Thomson Financials VentureXpert Web Database as well as Thomson Financials DataStream Advance 4.0 Database. As the data in these databases is incomplete and from time to time clearly faulty, especially when it comes to European firms, the information has been complemented and checked using company and stock market home pages.

The first sample studied consists of 309 European venture capital backed firms that have been exited through a trade sale between 1995 and 2004. All identified European firms, independent of exit country and founding date, are included. The firms represent all industries, high-, low-, and no-technology. Of special interest are high-technology, i.e. information and communication technology as well as medical/health/life science, firms. The characteristics of the sample are presented in Table 4-1.

Table 4-1. Characteristics of the trade sale sample.

Founding year	Number	Percentage
Before 1995	177	57%
1995-1999	109	35%
2000-2004	23	7%
Total	309	100%
Trade sale year	Number	Percentage
1995-1999	43	14%
2000-2004	266	86%
Total	309	100%
Target's country	Number	Percentage
Belgium	6	2%
Denmark	6	2%
Estonia	1	0%
Finland	16	5%
France	35	11%
Germany	33	11%
Hungary	3	1%
Ireland	12	4%
Italy	5	2%
Netherlands	12	4%
Norway	3	1%
Poland	2	1%
Romania	2	1%
Russia	1	0%
Spain	5	2%
Sweden	22	7%
Switzerland	5	2%
United Kingdom	140	45%
Total	309	100%
Acquirer's country	Number	Percentage
Australia	4	1%
Austria	4	1%
Belgium	5	2%
Canada	8	3%
Denmark	4	1%
Estonia	2	1%
Finland	13	4%

France	21	7%
Germany	16	5%
Hungary	1	0%
Iceland	1	0%
Ireland	4	1%
Israel	1	0%
Italy	6	2%
Japan	1	0%
Lithuania	1	0%
Netherlands	11	4%
Norway	2	1%
Poland	2	1%
Spain	5	2%
Sweden	16	5%
Switzerland	3	1%
United Kingdom	87	28%
United States	91	29%
Total	309	100%
Target's industry	Number	Percentage
Non high-technology	127	41%
Information and communication technology	147	48%
Medical/health/life science	35	11%
Total	309	100%
Cross-border trade sale	Number	Percentage
Yes	177	57%
No	132	43%
Total	309	100%

The second sample studied consists of 186 European venture capital backed high-technology firms that have had an initial public offering between 1995 and 2004. The firms thus represent the information and communication technology and the medical/health/life science industries. All identified European high-technology firms, independent of exit country and founding date, are included. The characteristics of the sample are presented in Table 4-2.

Table 4-2. Characteristics of the IPO sample.

Founding year	Number	Percentage
Before 1995	102	55%
1995-1999	80	43%
2000-2004	4	2%
Total	186	100%
IPO year	Number	Percentage
1995-1999	67	36%
2000-2004	119	64%
Total	186	100%
Firm home country	Number	Percentage

Austria	5	3%
Belgium	5	3%
Czech republic	1	1%
Denmark	3	2%
Finland	4	2%
France	34	18%
Germany	32	17%
Greece	1	1%
Hungary	1	1%
Iceland	1	1%
Ireland	2	1%
Italy	4	2%
Luxembourg	1	1%
Netherlands	7	4%
Norway	5	3%
Poland	4	2%
Russia	1	1%
Spain	2	1%
Sweden	5	3%
Switzerland	8	4%
United Kingdom	60	32%
Total	186	100%

Primary exchange country	Number	Percentage
Austria	3	2%
Belgium	6	3%
Czech republic	1	1%
Denmark	3	2%
Finland	3	2%
France	48	26%
Germany	18	10%
Greece	1	1%
Hungary	1	1%
Italy	3	2%
Netherlands	3	2%
Norway	5	3%
Peru	1	1%
Poland	3	2%
Sweden	5	3%
Switzerland	7	4%
United Kingdom	54	29%
United States	21	11%
Total	186	100%

Firm's industry	Number	Percentage
Medical/health/life science	57	31%
Information and communication technology	129	69%
Total	186	100%

Cross-border IPO	Number	Percentage
Yes	41	22%
No	145	78%
Total	186	100%

4.2.2. STATISTICAL METHODS

Multiple linear regression analysis is used to test the hypotheses developed in previous parts. Multiple regression analysis refers to a set of techniques for studying the straight-line relationships among two or more variables. Multiple regression estimates the β's in the equation

$$y = \beta_0 + \beta_1 x_1 + ... + \beta_n x_n + \varepsilon ,$$

in which y represents the value of the dependent variable, $x_1 \ldots x_n$ are the values of the independent variables, β_0 is a constant, $\beta_1 \ldots \beta_n$ are regression coefficients, and ε is an error (residual) term. Although the regression problem may be solved by a number of techniques, the most used method is least squares. In the least squares regression analysis, the β's are selected so as to minimize the sum of the squared residuals.

For the multiple regression technique to be used certain assumptions must be met. These assumptions include linearity, constant variance, normality, independence, and absence of multicollinearity:

- As multiple regression models test the linear (i.e. straight-line) relationship between the y and the x's any curvilinear relationship is ignored. Nonlinear patterns can be analyzed using residual plots.
- The variance of the ε's is assumed to be constant for all values of the x's. This can be detected by studying residual plots of the ε's versus the y's or the x's.
- The ε's are assumed to be normally distributed when hypothesis tests and confidence limits are to be used.
- The ε's are assumed to be uncorrelated with one another, which implies that the y's are also uncorrelated. This assumption can be violated in two ways: Model misspecification or time-sequenced data. Serial correlation patterns can be identified using residual plots versus time.
- Multicollinearity, which is the existence of near-linear relationships among the set of independent variables, is assumed not to be present.

To correct for the fact that the variance of the residuals is non-constant the dependent variables are, in this study, transformed in such a way that the variance becomes more nearly constant. This is done using the most popular variance stabilizing transformation, i.e. taking the logarithm of the dependent variables (Hair, Anderson, Tatham, and Black, 1998). In addition to this - i.e. to further ensure that the variance of the residuals is constant for all values of the independent variables - the standard errors for the regression coefficients are calculated using a heteroskedasticity-consistent estimator (White, 1980).

As the presence of multicollinearity can cause all kinds of problems, including inaccurate estimates of the regression coefficients, inflation of the standard errors of the regression coefficients, deflation of the partial t-tests for the regression coefficients, and giving false non-significant p-values, it deserves a closer look. Multicollinearity can be detected by studying pair-wise scatter plots of pairs of independent variables, looking for near-perfect relationships. Also high correlations in the correlation matrix are a sign of high multicollinearity. Unfortunately, multicollinearity does not always show up when considering the variables two at a time. Considering the variance inflation factors can solve this problem. The variance inflation factors describe the extent to which each independent variable is explained by other independent variables. As a result, high values signify high collinearity violating the assumption of low multicollinearity. Acceptable variance inflation factors do not exceed 10 (Hair, Anderson, Tatham, and Black, 1998). In this study, multicollinearity is verified by examining both correlations and variance inflation factors.

A further critical issue that has to be taken into consideration is sample size. The general rule regarding sample size is that the more independent variables the analysis includes, the more observations are needed. For it to be possible to generalize the results, the number of observations should be at least five times higher than the number of independent variables (Hair, Anderson, Tatham, and Black, 1998). However, a desirable level is 15-20 observations per independent variable.

To overcome the potential problems of selection bias in the trade sale sample the Heckman sample selection methodology is utilized in the trade sale regression analysis.

Sample selection arises when the criteria for selecting the observations are not independent of the dependent variable. In this study, the fact that the transaction value is not reported in connection to a trade sale is unlikely to be an arbitrary event independent of the transaction value. In other words, there is reason to believe that the poorer the return of a trade sale, the less likely the transaction value is to be published. This is a direct consequence of the fact that the performance of venture capitalists is largely determined based on the exit performance of the ventures they have invested in (e.g. Black and Gilson, 1998; Gompers, 1996). Thus, excluding firms whose trade sale exit transaction value has not been reported could bias the results, as the secrecy of the transaction value may not be random but a function of exit performance. The Heckman approach used here is a full maximum likelihood method where the first equation estimates the probability that the transaction value is known. The whole sample of trade sales completed between 1995 and 2004, including 309 observations, is used in the first equation. The independent variables used to perform the first estimation are (All variables are described in detail in the next Chapter, i.e. Chapter 4.2.3 Construct Operationalization): Trade sale in 1997, 1998, 1999 or 2000, age of firm at trade sale, age of venture capitalist at trade sale, number of rounds firm received, square of number of rounds firm received, industry is information and communication technology, industry is medical/health/life science, total amount invested in firm pre-trade sale, cross-border trade sale in non high-technology, cross-border trade sale in information and communication technology, cross-border trade sale in medical/health/life science industry, trade sale to venture capitalists market, and cross-border trade sale to venture capitalists market. The second equation is the actual regression, including 190 observations, using additional coefficients from the underlying regression equation to correct for sample selection. The use of the Heckman sample selection methodology makes it possible to alleviate potential sample selection biases, including biases that have not been wholly identified. The method used is similar to the methods used in previous research (e.g. Gompers and Lerner, 2000; Gulati and Higgins, 2003). For details on the Heckman sample selection methodology, see Heckman (1979).

4.2.3. CONSTRUCT OPERATIONALIZATION

To study the above mentioned hypotheses using the presented data, variables that are thought to best describe the phenomenon under study are developed. Only objective variables that are, whenever possible, derived from existing literature are used. The variables can be divided into dependent, independent, and control variables.

Dependent Variables

A very critical performance variable for venture backed firms is the valuation the firm reaches when it is exited (Stuart, Hoang, and Hybels, 1999). From the ventures perspective, this is because the exit often generates much needed capital. For the equity holders the exit means that they can exchange stock for cash. In the case of an IPO exchanging stock for cash is an opportunity that can be realized at will - as long as clauses in restrictive covenants are not broken. To measure the valuation and the capital raised the transaction value - in the case of trade sales - and the proceeds and the post under-pricing market value - in the case of IPOs - are used as dependent variables. These measures are widely used in finance and entrepreneurship literature (e.g. Gulati and Higgins, 2003; Stuart, Hoang, and Hybels, 1999). The transaction value refers to the sum of all considerations passed between the buyer and seller for the ownership in a firm. The proceeds refer to the amount of cash that is raised as a result of an initial public offering. The post under-pricing market value is defined, in line with previous studies (e.g. Aggarwal, 2003; Ritter and Welch, 2002; Rock, 1986), as the price per share multiplied by the total number of shares outstanding at the end of day two of trading. In line with previous studies (e.g. Hursti and Maula, 2002) these variables are normalized using the natural logarithm.

Independent Variables

The independent variables are chosen so as to facilitate the examination of the impact the factors under study have on the dependent variables, i.e. to facilitate the study of the hypotheses.

The first independent variable, cross-border exit, is a dummy indicating whether the exit is cross-border, i.e. conducted in a country different than the home country of the exited firm. This variable has previously been used by for example Hursti and Maula (2002). To determine whether an exit is cross-border the country of origin of a firm is defined as the country where the firm's headquarters are situated. This variable is chosen so as to make it possible to study the effect of cross-border exits on the dependent variables. The variable is given more depth by also considering the industry of the portfolio firm. The industries of the firms are defined in accordance to Thomson financials industry classification into non high-technology, information and communication technology, and medical/health/life science firms. Controlling for industry is standard praxis in the fields of finance and entrepreneurship (see e.g. Stuart, Hoang, and Hybels, 1999; Uotila, Maula, Keil, and Zahra, 2004).

The second independent variable is a dummy indicating whether the firm is backed by a venture capital investor with an institutionalized position in the country where the exit is conducted. The variable has previously been used by for instance Hursti and Maula (2002) and Jääskeläinen and Maula (2005). A venture capital firm is judged to have an institutionalized position in a country if she has an office in that country. This variable enables studying the impact local venture capitalists have on firm valuation in connection to exits. This mechanism should be particularly strong in connection to cross-border exits because the liabilities of foreignness of the portfolio firm are likely to be more severe in this case (Mäkelä and Maula, 2004b).

Control Variables

Because other factors than the above mentioned are likely to affect the valuation of a firm being exited, these factors have to be accounted for. The control variables used, which are described in more detail below, measure uncertainty about the quality of the portfolio firm, past performance of the portfolio firm, prominence of the venture capitalist, the firms potential for future growth, the 'hotness' of the market, and the industry of the portfolio firm.

Firm age is extensively used as a measure of uncertainty about the quality of a firm in finance literature (e.g. Beatty and Ritter, 1986; Gulati and Higgins, 2003; Stuart, Hoang, and Hybels, 1999). Although a longer existence does not automatically mean that a firm is more developed it does mean that the firm has had more time to build its operations and that it has a performance history based on which its quality can be assessed (Beatty and Ritter, 1986). In this study the number of days the portfolio firm has existed at the time of the exit is taken as a measure of the uncertainty about the quality of the portfolio firm.

Venture capitalists often invest in firms in rounds. This is done to increase control and to manage losses (Sahlman, 1990). In other words, if the portfolio firm does not meet its performance targets – set up by the firm and the venture capitalist(s) - it is less likely to be able to raise another round of financing. On the other hand, the willingness of venture capitalists to participate in several rounds shows that they have confidence in the firm and are pleased with its past performance (Gompers, 1995). However, too many rounds, i.e. excessive bridging, may be symptomatic for difficulties in exiting the firm. In other words, the number of financing rounds the firm has received is anticipated to have an inverted-U-shaped effect on exit performance. Thus, the number of rounds the portfolio firm has received and the square of the number of rounds the portfolio firm has received are used as a measure of past performance of the portfolio firm in this study.

As has been mentioned several times, venture capitalists are to a large extent judged based on past exit performance (e.g. Gompers, 1996). What is more, it has been shown that trusted venture capitalists certify the quality of their portfolio firms to outside investors (e.g. Barry, Muscarella, Peavy, and Vetsuypens, 1990). When these two findings are combined it can be concluded that an older venture capitalist, whose abilities have been proven time and again, should be able to help her portfolio firm obtain a higher exit valuation, than her less experienced and proven peers, due to her reputation. In line with previous studies (e.g. Gompers, 1996) the prominence of the venture capitalist is measured using the age of the venture capitalist. To accomplish this, the number of days the oldest venture capital firm that has invested in the portfolio firm has existed at the time of the exit in included as a control variable in this study.

The amount of private financing the firm has received pre-exit provides a reliable measure of the success the firm has had in the past and an indicator of the firm's potential for growth (Gulati and Higgins, 2003). This is because the more funding a firm has received, the more resources it has had to develop tangible and intangible assets and the more valuable it should be. In line with past studies the cash invested in a firm pre-exit is taken as a measure of the firms past performance, the uncertainty related with it, and as an indicator of the firm's future growth potential (Gulati and Higgins, 2003; Stuart, Hoang, and Hybels, 1999).

It has been shown that there are 'hot' and 'cold' markets for exits, especially IPOs (Ritter, 1984). This implies that the possibility for an exit to take place, and the valuation the firm receives in connection to the exit, may depend on market conditions. The receptivity of the market is thus controlled for. To do this dummy variables are included to designate the four years – 1997, 1998, 1999, and 2000 - when the exit market, especially the IPO market, flourished. This approach has been employed previously by for example Stuart, Hoang, and Hybels (1999).

The final control variables used are dummy variables indicating the industry of the portfolio firms. The industries of the firms are defined in accordance to Thomson financials industry classification into non high-technology, information and communication technology, and medical/health/life science firms. Controlling for industry is standard praxis in the fields of finance and entrepreneurship (see e.g. Stuart, Hoang, and Hybels, 1999; Uotila, Maula, Keil, and Zahra, 2004). All the variables as well as their description and source can be seen in Appendix 1. Figure 4-2 shows an overview of the operationalization of the quantitative study.

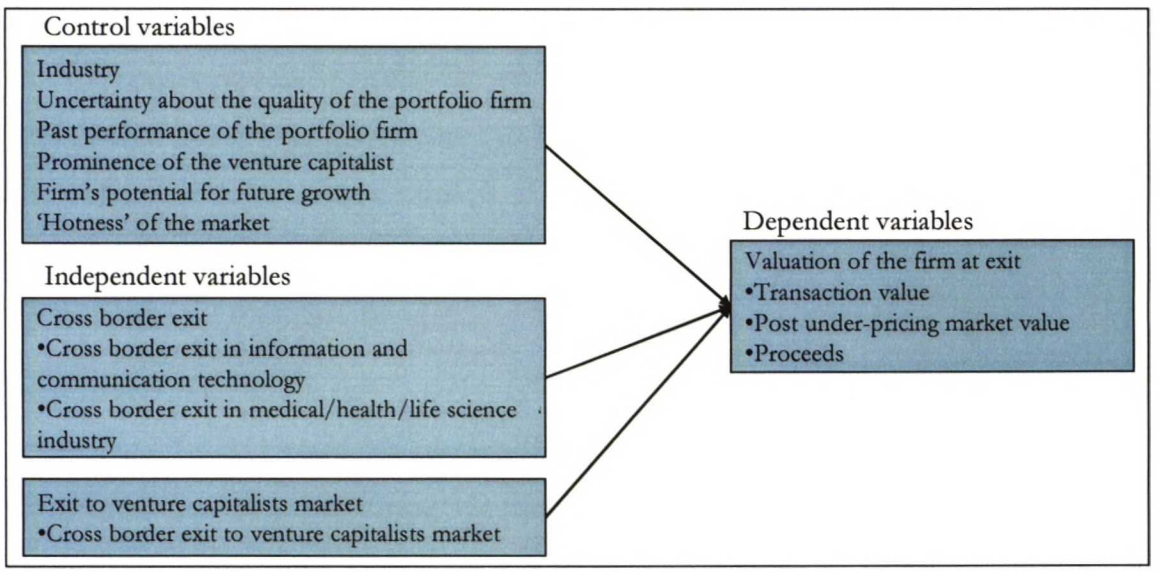

Figure 4-2. Overview of the operationalization of the quantitative study.

Previous studies have sometimes included other control variables than the ones used here. Variables that could have been of interest in this study are book value before the exit, total assets before the exit, sales before the exit, and operating profit before the exit. Unfortunately, the poor quality of this data in the sources used made it impossible to include these variables in the study.

4.3. RESULTS

Summary statistics and pair-wise correlations of the trade sale regression variables are reported in Appendix 2. As can be seen the intercorrelations between the variables, except for variables where one is a subgroup of the other or where one is the square of the other, suggest no problems with multicollinearity.

The results of the second equation of the trade sale Heckman regressions can be seen in Table 4-3. The regression coefficients and the absolute heteroskedasticity-consistent z-statistics are presented. The z-statistics are in brackets. The dependent variable is first tested against the control variables where after the impact of the independent variables under study are tested.

Table 4-3. Results of the second equation of the Heckman regression for trade sales. Regression coefficients and absolute heteroskedasticity –consistent z-statistics are presented.

Dependent variable	Log of transaction value				
Independent variables					
Trade sale in 1997	.329 (1.03)	.301 (.97)	.395 (1.25)	.338 (.79)	.312 (.99)
Trade sale in 1998	.024 (.09)	.003 (.01)	.050 (.20)	.004 (.01)	-.047 (-.19)
Trade sale in 1999	-.118 (-.59)	-.085 (-.45)	-.139 (-.72)	-.140 (-.28)	-.119 (-.62)
Trade sale in 2000	.094 (.51)	.090 (.53)	.101 (.59)	.098 (.34)	.096 (.57)
Age of firm at trade sale	.000 (.74)	.000 (.74)	.000 (.65)	.000 (.62)	.000 (.65)
Number of rounds company received	-.005 (-.05)	-.006 (-.06)	-.010 (-.10)	-.020 (-.14)	-.036 (-.35)
Number of rounds company received, squared	-.006 (-.61)	-.006 (-.54)	-.006 (-.56)	-.005 (-.44)	-.003 (-.25)
Age of venture capitalist at trade sale	.000 (.95)	.000 (1.17)	.000 (1.26)	.000 (.31)	.000 (1.01)
Industry, information and communication technology	-.101 (-.55)	-.159 (-.99)	-.273 (-1.43)	-.085 (-.14)	-.183 (-1.12)
Industry, medical/health/life science	.151 (.64)	.090 (.42)	.220 (.96)	.168 (.26)	.059 (.26)
Total amount invested in firm pre-trade sale	.001 (2.94)**	.001 (2.84)**	.001 (2.84)**	.001 (1.40)	.001 (2.33)*
Cross border trade sale		.193 (1.53)+			.078 (.52)
Cross border trade sale in information and communication technology			.339 (1.89)*		
Cross border trade sale in non high-technology			.209 (1.34)+		
Cross border trade sale in medical/health/life science			-.111 (-.52)		
Trade sale to venture capitalists market				.105 (.31)	
Cross border trade sale to venture capitalists market					.291 (1.80)*
Constant	2.083 (7.58)**	1.964 (7.75)**	1.986 (8.20)**	2.066 (3.14)**	2.056 (7.59)**
X^2	21.38	22.27	25.11	21.98	25.35
p-value	.0297	.0346	.0335	.0378	.0207
Number of observations	309	309	309	309	309

** Significant at 1% level, * significant at 5% level, + significant at 10% level.
1-tailed tests for the hypothesized relationships, 2-tailed tests for the control variables.

Because the X^2 tests, which test goodness of fit of the model, are statistically significant at the 5% level in all regressions the null hypothesis that the model has no explanatory power can be discarded. All regressions also fulfill the criteria of sufficient sample size as they all include five or more observations per independent variable (lowest value is 22.07).

The regression analysis shows that the amount of money invested in the firm pre-exit is a major factor in determining the transaction value. Furthermore the age of the firm, the age of the venture capitalist, and the fact that the firm has been sold in 1997, 1998, or 2000 are all positively, though not significantly, related to transaction value. The assumed inverted-U relationship between the amount of venture capital rounds raised by the firm and the transaction value is supported by the results, as the square of the number of rounds the firm has received is negatively related to transaction value. Medical/health/life science firms seem to be positively related to transaction value whereas information and communication technology firms are negatively related to transaction value. The findings of the impact of industry on transaction value are not significant.

Cross-border trade sales are clearly positively related to transaction value. This result holds true also for non high-technology and information and communication technology firms but not for medical/health/life science firms. The transaction value is shown - though not in a statistically significant manner - to be higher if the venture capitalist has an institutionalized position in the country where the trade sale takes place. This relation is stronger, and significant, for cross-border trade sales where the firms are backed by venture capitalists with an institutionalized position in the exit country. Thus, having a venture capitalist from the exit country seems to be especially beneficial in the case of cross-border trade sales.

The regression analysis gives no support for hypothesis 1, which states that domestic firms are, other things being equal, sold at a cheaper price to foreign than to domestic buyers. On the contrary, the results show that cross-border trade sales generate higher sales prices than similar domestic trade sales. Hypothesis 2a, which states that firms

backed by venture capitalists – foreign or domestic – from the exit country are, other things being equal, sold at a higher price than firms with no venture capitalist representation in the exit country, is supported by the results. The hypothesized relation seems to be particularly strong for cross-border trade sales.

Summary statistics and pair-wise correlations of the IPO regression variables are reported in Appendix 3. As can be seen the intercorrelations between the variables, except for variables where one is a subgroup of the other or where one is the square of the other, suggest no problems with multicollinearity. The fact that all variance inflation factors are below ten (highest value is 6.94) also suggests that one can be confident that the regression estimates are not degraded by the presence of multicollinearity.

The results of the IPO regression with proceeds and post under-pricing market value as dependent variables can be seen in Table 4-4 and Table 4-5. The regression coefficients and the absolute heteroskedasticity-consistent t-statistics are presented. The t-statistics are in brackets. The dependent variable is first tested against the control variables where after the impact of the independent variables under study are tested. The R^2s show that the control variables explain 19.0% and 16.0% of the variance in the proceeds and post under-pricing market values, respectively. The independent variables increase this value, i.e. the explanatory power of the models, as the R^2s for these regressions vary between 22.3% and 29.6% for proceeds and 19.3% and 24.4% for post under-pricing market values. Because the F tests, which test goodness of fit of the models, are statistically significant at the 1% level in all regressions the null hypothesis that the model has no explanatory power can be discarded. All the regressions also fulfill the criteria of sufficient sample size as all regressions include five or more observations per independent variable (lowest value is 9.75).

Table 4-4. Results of the regression for IPO proceeds. Regression coefficients and absolute heteroscedasticity-consistent t-statistics are presented.

Dependent variable	Log of proceeds				
Independent variables					
Age of firm at IPO	.000 (-1.20)	.000 (-1.10)	.000 (-1.24)	.000 (-1.03)	.000 (-.86)
Age of venture capitalist at IPO	.000 (-.18)	.000 (-.26)	.000 (-.40)	.000 (.52)	.000 (.29)
Total amount invested in firm pre-IPO	.005 (4.02)**	.004 (3.34)**	.004 (2.90)**	.004 (3.04)**	.004 (2.86)**
Number of rounds company received, squared	-.003 (-.067)	-.004 (-1.07)	-.004 (-.90)	-.003 (-.75)	-.004 (-.97)
Number of rounds company received	.076 (1.06)	.098 (1.35)	.095 (1.31)	.083 (1.27)	.100 (1.37)
IPO in 1997	-.308 (-1.38)	.392 (-1.56)	-.406 (-1.60)	-.217 (-1.06)	-.334 (-1.40)
IPO in 1998	.094 (.72)	.064 (.47)	.047 (.34)	.085 (.70)	.072 (.51)
IPO in 1999	-.159 (-.96)	-.179 (-1.11)	-.217 (-1.35)	-.145 (-.99)	-.170 (-1.06)
IPO in 2000	-.052 (-.40)	-.042 (-.34)	-.055 (-.44)	-.026 (-.22)	-.047 (-.37)
Industry (Medical/health/life science compared to information and communication technology)	-.218 (-1.62)	-.240 (-1.78)+	-.158 (-1.14)	-.220 (-1.76)+	-.238 (-1.75)+
Cross border IPO		.211 (2.04)*			.343 (2.31)*
Cross border IPO in information and communication technology			.327 (2.56)**		
Cross border IPO in medical/health/life science			.007 (.04)		
IPO to venture capitalists market				-.374 (-3.30)**	
Cross border IPO to venture capitalists market					-.279 (-1.53)+
Constant	1.733 (12.37)**	1.671 (12.49)**	1.682 (12.71)**	1.946 (13.73)**	1.630 (11.82)**
R2	.1900	.2228	.2393	.2961	.2405
F	6.74**	6.77**	6.86**	7.02**	6.41**
Number of observations	117	117	117	117	117

** Significant at 1% level, * significant at 5% level, + significant at 10% level.
1-tailed tests for the hypothesized relationships, 2-tailed tests for the control variables.

Table 4-5. Results of the regression for IPO post under-pricing market values. Regression coefficients and absolute heteroscedasticity-consistent t-statistics are presented.

Dependent variable	Log of post under-pricing market value				
Independent variables					
Age of firm at IPO	.000 (-.08)	.000 (-.15)	.000 (-.21)	.000 (-.19)	.000 (-.11)
Age of venture capitalist at IPO	.000 (.77)	.000 (.46)	.000 (.39)	.000 (1.04)	.000 (.63)
Total amount invested in firm pre-IPO	.003 (3.86)**	.003 (4.32)**	.003 (4.55)**	.003 (3.36)**	.003 (4.33)**
Number of rounds company received, squared	-.001 (-.25)	-.003 (-.91)	-.002 (-.67)	-.001 (-.41)	-.003 (-.87)
Number of rounds company received	.030 (.46)	.045 (.75)	.040 (.60)	.045 (.68)	.047 (.77)
IPO in 1997	-.304 (-1.46)	-.374 (-2.10)*	-.395 (-2.20)*	-.258 (-1.30)	-.348 (-1.91)+
IPO in 1998	.223 (1.91)+	.121 (.93)	.107 (.81)	.201 (1.66)+	.137 (1.05)
IPO in 1999	.292 (1.56)	.241 (1.39)	.208 (1.20)	.272 (1.49)	.243 (1.40)
IPO in 2000	.223 (1.99) *	.220 (2.01)*	.210 (1.93)+	.240 (2.23)*	.220 (1.99)*
Industry (Medical/health/life science compared to information and communication technology)	-.160 (-1.50)	-.160 (-1.52)	-.089 (-.79)	-.164 (-1.51)	-.160 (-1.50)
Cross border IPO		.460 (3.78)**			.521 (2.72)**
Cross border IPO in information and communication technology			.567 (3.54)**		
Cross border IPO in medical/health/life science			.250 (1.57)+		
IPO to venture capitalists market				-.288 (-2.03)*	
Cross border IPO to venture capitalists market					-.126 (-.53)
Constant	1.976 (14.12)**	1.916 (14.93)**	1.920 (15.04)**	2.162 (12.33)**	1.899 (14.32)**
R2	.1602	.2362	.2443	.1931	.2379
F	4.30**	5.30**	5.21**	4.75**	5.01**
Number of observations	186	186	186	186	186

** Significant at 1% level, * significant at 5% level, + significant at 10% level.
1-tailed tests for the hypothesized relationships, 2-tailed tests for the control variables.

In accordance with what was assumed, the results show that the amount invested in a firm pre-IPO is a major factor determining the proceeds and post under-pricing market value of an IPO. Furthermore, the number of rounds the firm has raised is positively, though not significantly, related to proceeds and post under-pricing market values. The assumed inverted-U relationship between the amount of venture capital rounds raised by a firm and the proceeds and post under-pricing market value is supported by the results, as the square of the number of rounds the firm has received is negatively related to the proceeds and the post under-pricing market values. Information and communication technology firms seem to be able to raise more money and to receive higher valuations than medical/health/life science firms. The impact of the industry of the firm is significant for proceeds. The fact that a firm has gone public in 1997, 1999, or 2000 is non-significantly negatively related to proceeds. A 1997 IPO is significantly negatively related to post under-pricing market value, a 1998 IPO is non-significantly positively related to proceeds and post under-pricing market value whereas a 2000 IPO is significantly positively related to post under-pricing market value.

The results show that cross-border IPOs are significantly positively related to proceeds and post under-pricing market values. This result holds true for information and communication technology as well as medical/health/life science firms. Rather surprisingly, the proceeds and post under-pricing market value of an IPO are shown by the data to be lower if the venture capitalist is located in the same country as the primary exchange where the IPO takes place. These results hold true also for cross-border listings with a venture capitalist from the same country as the primary exchange. Thus, cross-border IPOs seem to generate higher proceeds and post under-pricing market values than domestic ones for reasons not related to the actions of the venture capitalists from the exit country.

Hypotheses 2b and 2c, which state that the proceeds and post under-pricing market values of firms affiliated with venture capitalists institutionalized in the same country as the primary exchange where the IPO takes place is positioned are, other things being equal, higher than for firms lacking such affiliations, are not supported by the results. Hypotheses 3a and 3b, which state that the proceeds and post under-pricing market values of cross-border IPOs are, other things being equal, higher than the proceeds and

post under-pricing market values of domestic IPOs, are strongly supported by the results. These findings hold true also within the domains of information and communication technology as well as medical/health/life science firms.

The fact that the United Kingdom is by far the largest and the most established venture capital market in Europe raised the possibility that some of the observed effects would be driven solely by the data from the United Kingdom. To test for this effect all the regressions presented were rerun without the firms whose headquarters are situated in the United Kingdom. The results did not vary notably from the ones presented and thus the conclusion was made that with regard to the studies conducted, the United Kingdom does not differ from other European countries. Thus, the results can be regarded to truly represent Europe as a whole.

4.4. CONCLUSIONS FROM THE QUANTITATIVE STUDY

The conducted quantitative study gives no support to the notion that firms are sold abroad too cheaply. Instead the study suggests that firms are, other things being equal, sold at a higher price to foreign than to domestic buyers. Cross-border trade sales are especially successful if the firm is supported by a venture capitalist from the exit market. This highlights the importance of being supported by a venture capitalist from the exit market that can reduce the liabilities of foreignness in connection to a cross-border trade sale.

The amount invested in the firm pre-exit is a leading factor in determining the value of the firm in a trade sale. This is not surprising as the amount of private financing the firm has received pre-exit provides a reliable measure of the success the firm has had in the past and an indicator of the firm's potential for growth. The logic of trade sales can thus be summed up as follows: Firms are priced in a way that accentuates the amount of money invested in them. However, buyers are willing to pay a premium to sellers they trust and for firms from foreign countries. Possible reasons for paying a premium for foreign firms will be studied in the next chapter.

The amount invested in a firm pre-exit is of critical importance also in connection to IPOs: The amount invested in a firm pre-exit is positively related to both proceeds and

post under-pricing market value. The 'hotness' of the market also affects IPO success. Furthermore, information and communication technology firms seem to be able to generate higher proceeds and post under-pricing market values than medical/health/life science firms.

The proceeds and post under-pricing market values of cross-border IPOs are found to be higher than the ones of domestic IPOs. The reasons for this are probably many, the most important one presumably being capital availability. Other, potentially, influential factors include reduced exposure to domestic market risk, increased portfolio diversification, stricter demands imposed on corporate governance, increased liquidity due to a wider investor base, and reduced information asymmetry. IPOs, domestic and cross-border, backed by venture capitalists from the exit country generate lower proceeds and post under-pricing market values than other IPOs. The reason for this surprising finding is unknown. The implications of the quantitative study for ventures, venture capitalists, and society are presented in Table 4-6.

Table 4-6. Implications of the findings from the quantitative study.

	Implications for		
Phenomenon	Ventures	Venture capitalists	Society
Cross-border exits generate higher returns than domestic ones	To maximize the financial resources available the firm should arrange itself in a way that allows for a cross-border exit to take place.	Venture capitalists should build trusted relationships to foreign markets and develop capabilities in transforming firms to be ready for cross-border exits.	The view that firms are sold abroad too cheaply seems unwarranted. In reality cross-border trade sales seem to be related with better valuations.
Cross-border trade sales with a venture capitalist from the exit country generate higher returns than other trade sales	If a trade sale is planned, the venture should, if possible, take the planned exit country into consideration when choosing venture capital investor to maximize the available financial resources.	Creating investor syndicates including foreign venture capitalists from the planned exit country is critical for the maximization of the returns trade sales create.	To maximize the financial resources available to firms, both directly and through increased venture capital activity, foreign venture capitalists should be persuaded to make investments in domestic firms.

The fact that all control variables of possible interest could not be included due to the poor quality of the data in the sources used does not seem to be of critical importance for the results. The foremost reason for this is the prominence of the total amount invested in the firm pre-exit which seems to explain a great deal of the variance in exit performance. This is not surprising given that the amount of private financing a firm has received pre-exit has previously been found to provide a reliable measure of the

success the firm has had in the past and a good indicator of the firm's potential for growth (Gulati and Higgins, 2003).

The above mentioned results have been attained by studying European firms as a whole. The results should be more important for firms and venture capitalists from small countries and, thus, for small countries as a whole, than for others. The reasons for this are that small countries can only focus on a limited number of industries and have exit markets of limited efficiency. An example of such a country is Finland. To assess the affect of cross-border exits in such an environment, and to study the mechanisms that lead to the varying results in detail, case studies are conducted. This is the topic of the next chapter.

The purpose of the case studies is to understand how venture capitalists influence the successfulness of cross-border exits, under what circumstances foreign exits are beneficial for portfolio firms, how cross-border exits influence the development of the venture capital market in countries with small home markets, and what effect cross-border exits have on the domestic dimension in the operations and decision-making of a firm.

This chapter first explains the methodology to be used and then moves on to present the results. The chapter closes with the conclusions of the case studies.

5.1. METHODOLOGY

Given the limited theory and empirical research on cross-border exits, an inductive, multi-case design is used (Eisenhardt, 1989; Yin 1994). This method allows for a replication logic, in which the individual cases are treated as experiments (Yin, 1993). Using this approach, within-case analysis, i.e. studying the cases as independent experiments, will first be conducted where after cross-case analysis will be performed (Miles and Huberman, 1990). Furthermore, an embedded design is used in conducting the case studies. In practice this means that the cases focus on multiple levels of analysis, i.e. the ventures, the venture capitalists that support them, and society as a whole. According to Yin (1993 and 1994) this approach allows for a richer and more reliable process of inductive theory building than a single level design. A further advantage of using case studies is that both quantitative and, rich, qualitative data can be used (Birkinshaw, 1997).

Selecting the cases is a critical part of conducting case studies (Denzin and Lincoln, 1994). This is because theoretical sampling, i.e. choosing cases for theoretical as opposed to statistical reasons, rather than random sampling is employed (Eisenhardt, 1989). The purpose of theoretical sampling is to deliberately choose cases which are extreme situations or include opposite features so as to make it possible to use the cases to extend theory (Eisenhardt, 1989). The theory that emerges through this process can be generalized analytically (Yin, 1994). Analytical generalization implies generalization

from one case to other cases that belong to the scope of the theory involved as opposed to statistical generalization that implies generalization from a sample to a population (Yin, 1994). For theoretical sampling and analytical generalization to be efficient appropriate sampling dimensions must be identified and the cases must be chosen carefully using these dimensions. These steps are critical to ensure that appropriate variation is achieved in the studied sample. In this study the dimensions used to select the firms studied are chosen so as to generate variance in:

- Industry of the portfolio firm – i.e. in technology and market risk,
- Uncertainty about the quality of the portfolio firm,
- Past performance of the portfolio firm,
- The firms potential for future growth,
- The 'hotness' of the market, and
- The successfulness of the exit.

The sampling dimensions used, the firms studied, and the studied firms' values for the sampling dimensions are presented in Table 5-1.

Table 5-1. Sampling dimensions and firms studied. All data gathered from public sources, predominantly the National Board of Patents and Registration of Finland. (Abbreviations: VC=venture capital)

Dimension	Focus Inhalation	Inion	Iobox	Remix
Exit method	Trade sale	IPO	Trade sale	Trade sale
Exit country	Canada	United Kingdom	Spain	Singapore
Venture capitalists country	Finland	Finland Sweden United States	Finland United Kingdom United States	Finland
Portfolio firm industry	Medical/Health/Life Science	Medical/Health/Life Science	Information and Communication Technology	Information and Communication Technology
Founding year	2000	1999	1995	1990
First VC investment	2001	2000	1998	2000
Exit year	2003	2004	2000	2001
Investments in firm pre-exit (MEUR)	13	36	18	1
Exit value (MEUR)	1	129	238	9

As was already mentioned, the four case firms represent the Finnish medical/health/life science and information and communication technology industries. These industries are

chosen because they receive considerable venture capital backing, are seen to be of uttermost importance in the future, and constitute the bulk of the growth-oriented entrepreneurship and technological innovation in society. Furthermore, all the firms have been exited within the last five years which means that the interviewees should have a clear picture of the events.

5.1.1. DATA

The data was collected using interviews and secondary data. The interviewees included the CEOs, or in one case the COO, of the firms at the time of the exit and a venture capitalist who worked closely with the firm until the exit, i.e. was a member of the board of directors. Also a representative of the National Technology Agency of Finland (TEKES), which has sponsored all of the case firms, was interviewed. In this way concerns regarding source bias and recall issues could be reduced (Denzin and Lincoln, 1994). The interviews were semi-structured and lasted from 45 to 90 minutes. The semi-structured interview guide used can be seen in Appendix 4. The interviewees were given freedom to tell the firm's story as they observed it and were encouraged to back up their interpretations with facts.

To enable triangulation and to leverage on the strengths and reduce the weaknesses of different methods also secondary data sources were used (Jick, 1979). The secondary data, which was collected mostly from the archives of the National Board of Patents and Registration of Finland, consisted of financial statements, documentation from annual general meetings, documentation from board of directors meetings, and press releases. Also firm home pages and media search engines were used to collect this data. The data was collected for the entire existence of the firms. In addition to this, all data on the firms available in Thomson Financials SDC Platinum VentureXpert Database and Thomson Financials VentureXpert Web Database was collected and used.

The data was analyzed according to approaches normally used in inductive studies (Eisenhardt, 1989; Miles and Huberman, 1990). First, the secondary data was tabulated and checked for consistency in the interviews. The interviews themselves were all recorded and notes regarding the interviews were written within 24 hours of the

interview in all cases. When this was done within-case analysis was conducted to gain familiarity with the data, identify connections, and to create initial theories. After this cross-case analysis, including the use of tables and matrices was conducted to further develop and refine the emerging theories. The within-case as well as the cross-case analysis was iterative.

When using qualitative methods to study past events one cannot avoid taking a counterfactual position. The problem arises from the reality that when drawing conclusions on the effects of past actions one is, at least in principle, comparing the actual outcome to what would have happened if a different action or no action at all would have been taken. This is a hard, not to say an impossible, task. To overcome this problem the results and the conclusions parts focus on what can be learnt from the events, i.e. the actual actions taken and the resulting outcomes, rather than on considering if other actions could have lead to more favorable outcomes.

5.2. RESULTS

This part includes a short presentation of the case firms, i.e. a within-case analysis, and a more rigorous cross-case analysis.

5.2.1. WITHIN-CASE ANALYSIS

This section shortly tells the stories of the case firms, i.e. Focus Inhalation, Inion, Iobox, and Remix. All the data was gathered from public sources, predominantly the archives of the National Board of Patents and Registration of Finland.

Focus Inhalation

Focus Inhalation, which develops and manufactures respiratory drugs and respiratory devices for the treatment of various deceases, was founded on the 25th of September 2000 as a subsidiary of the Schering Group. On the first of March 2001 Schering gave its inhalation business to Focus Inhalation and Bio Fund Management and Sitra invested in the spin-off. During the same year the decision to build a drug factory in Turku was made. In 2002 laboratory and office spaces were taken into use in Turku. At

this point the product portfolio included three asthma drugs, one of which had been approved for sale. Furthermore, a cancer pain reliever was in phase one of clinical trials. In 2003 a distribution deal for one of the asthma drugs was made. A pilot production facility was also taken into use in Turku. During the year the firm went into financial distress. As a response to this the firm's main owners, Sitra and Bio Fund Management, signed a deal with Canadian Lab International to sell all of the firm's shares and to arrange further financing for the firm. In the deal Lab International agreed to purchase the firm for debentures to be converted into 1.7 million shares of Lab International, at any time after October 1st, 2005, and no later than October 1st, 2008. As part of this transaction, Lab International agreed to invest three MEUR in Focus Inhalation, while Sitra and Bio Fund Management agreed to invest four MEUR into Focus Inhalation in the form of zero coupon convertible debentures. The proceeds are currently being used for the development of products in Focus Inhalation's (Lab Pharma's) portfolio. The firm was sold clearly under its real value as a consequence of it being in financial distress and its negotiating power thus being very poor. After the acquisition Lab Pharma's operations have developed favorably and more personnel have been hired especially in Finland but also elsewhere. Appendix 5 summarizes some key figures and other data relating to Focus Inhalation.

Inion

Inion, which develops, manufactures, and commercializes novel biodegradable implants for the orthopedic fixation market, was founded in the end of 1999 and operations begun during the first days of the year 2000. During that year the first investors, Bio Fund Management and Bank von Ernst, also made their investments in the firm and a pilot factory that fulfills international standards was built and used to develop skull and facial orthopedic products. An international network was also built as regards to the core business areas. Furthermore, the personnel and structures were developed to match international standards in corporate governance, R&D, production, and quality respects. In 2001 the firm attained CE and FDA approvals for its scull and facial products and a CE approval for its dental products. Furthermore, the firm attained the relevant ISO quality approvals from Lloyds's Register. The commercialization of the firm's scull and facial products was initiated and in addition to this the firm begun building an own sales

and distribution network in Europe and in the U.S. Furthermore, a scientific advisory board was founded. In 2002 an own sales firm was founded in the U.S. to serve the Americas. Sales organizations able to serve the rest of the world were also built and an options program for the key personnel was initiated. During the year a venture capital round was also conducted to finance the firm's operations and further development. In 2003 the sales organization the firm had built in the U.S. was built down and North American sales were handed over to Stryker Sales Corporation in a distribution deal. Additionally, the firm's sales, marketing and logistics in the U.S. were centered to a sales office founded in Oklahoma City. During 2003 the firm's sales of scull, facial, and sports products increased faster than the market as a whole. In 2004 the sales and distribution of the firm's products in Europe was handed over to the Stryker Sales Corporation. The firm went public in London on the 26th of November 2004 raising 43 MEUR and being valued at 129 MEUR. The proceeds will be used for R&D, i.e. for the development of a new generation of implants that are designed to promote faster bone healing, and to increase working capital as demanded by the firm's sales growth. The original owners did not sell their ownership in the firm in connection to the IPO. The founders/managers own 17% of the firm after the flotation. The firm has continued to hire more personnel in Finland and elsewhere after its IPO. Appendix 5 summarizes some key figures and other data relating to Inion.

Iobox

Iobox, which provided wireless value added and internet services, was founded in 1995 under the name GNW Finland. The firm opened its first free e-mail service in 1997. In 1998 the firm received its first venture capital investments and was rearranged to be ready for the expected change in consumer internet and mobile applications use. During the year the number of users increased from 2,000 to 120,000. In January 1999 a new firm, Iobox, with three employees was established. The firm also raised a second round of venture capital during this year and subsidiaries were founded in Sweden, Germany, and Great Britain. Later the same year the firm's headquarters were moved to London. At the end of the year the firm had 50 employees. In July 2000 Iobox was bought by Terra Mobile, a subsidiary of Telefonica, for approximately 238 MEUR. At the time of the acquisition the firm had 120 employees about 90 of whom were working in Finland.

Telefonica's logic for buying Iobox was to create a company concentrating on mobile services that would be listed on an appropriate stock exchange (Oksanen and Rilla, 2005). However, six months after the acquisition the plan to list the new company was abandoned due to unfavorable market conditions (Oksanen and Rilla, 2005). Consequently, Telefonica Moviles wrote off 154 MEUR in its 2002 annual report due to the cancellation of the goodwill of the Terra Mobile subsidiary Iobox. Though the sum is large it seems small when compared to the 12,342 MEUR Telefonica wrote off its assets relating to the UMTS licenses in Germany, Austria, Italy, and Switzerland. In connection to the write offs Telefonica made the decision to abandon its operations in Germany, Austria, and Switzerland and to focus its activities to Spain and Latin America. This was also a de facto death blow to Iobox. Its hosting center was moved from London to Madrid and once the technology transfer projects were finished so was Iobox.

Although Iobox may seem as a case where a cross-border exit leads to the transfer of knowledge and assets abroad and the closing of the firm's operations in its country of origin without any benefit to that country this interpretation is not entirely true. First of all, the venture capitalists that had invested in Iobox made an exceptionally profitable deal. This money has since been returned to investors and probably, at least partly, been invested in a new generation of Finnish high-technology firms. Secondly, Iobox would probably have gone bankrupt as an independent firm as its technology was before its time – the UMTS networks and handsets that its business plan relied upon are only now (2005) beginning to seriously penetrate the market. Thus, had Iobox not been sold abroad the result would have been even worse for Finland: All else would have been the same as now but the investors who invested in Iobox would have gotten nothing. Appendix 5 summarizes some key figures and other data relating to Iobox.

Remix

Remix, which develops strategic supply chain planning software, was founded in 1990. In 2000 Remix received its first and only venture capital round. In the same year the firm founded Remix Technologies in the U.S. to sell and distribute Remix's products in the U.S. The firm also signed other testing and distribution deals during the same year.

On the second of May 2001 Remix was sold to Flextronics. At the time the founder/CEO owned 72% of the firm and the venture capitalist owned 28%. After the exit the firm's focus was changed from selling software to consulting. Customer relationships with all companies but Flextronics were ended as were all partner relations. The firm merged with Flextronics on the 31st of December 2001 and simultaneously its name was changed to SimFlex Group. After the merger software sales were restarted in the U.S. as well as in Europe. Today, the SimFlex Group is an independent software and consulting services group within Flextronics. Its business and number of employees has grown in Finland as well as globally after the exit. Appendix 5 summarizes some key figures and other data relating to Remix.

5.2.2. CROSS-CASE ANALYSIS

This section presents the results of the case studies considered as a whole. The findings are presented as propositions which are discussed separately. The critical issues relating to the propositions are summarized in matrices and illustrated using quotations.

The Pre-Exit Development of High-Technology Portfolio Firms

As could be expected based on the findings regarding born globals (e.g. Oviatt and McDougall, 1994; Rennie, 1993) the most successful firms are found to be the ones that build their operations so that they can handle international markets and large volumes from the very beginning. In practice this means that the operational systems – production, quality, business intelligence, etc. – are built so that they do not need to be redone when internationalization takes place. Internationalization is necessary as the firms markets, in line with the born global concept, are not in Finland. For the large investments needed to build a firm in this way to be justified, it is critical that the firm is built around a technical platform that enables several product lines and large enough potential markets, not only a single product.

Building a firm in the described way makes it possible to recoup the large R&D investments needed and to attain higher valuations, i.e. raise more money, at investment rounds. Furthermore, building the firm in this way also gives credibility which helps in

hiring competent managers as well as in attracting partners and customers. The citations regarding the findings presented so far can be seen in Table 5-2. In more formal terms, these findings are,

> *Proposition 1: High-technology firms should be built around product platforms not single product ideas.*

> *Proposition 2: The most successful high-technology firms are the ones that build their operations on an industrial scale from the very beginning.*

> *Proposition 3: Building a firm on an industrial scale from the very beginning means that its operations must internationalize early to build awareness of the firm in its main markets if the required investments are to be recouped.*

Table 5-2. Evidence from the case studies regarding firms being born global, its implications, and product platforms.

Firm management	Venture capitalists
We have done all things on an industrial scale to begin with. This is the biggest difference to other bio and medical technology firms.	
We were given the circumstances to build the firm systematically and aggressively to the scale of an international player. The structures of the firm have been built as it would be generating 100 MEUR or more in revenues. When we bought a business process software we chose SAP… at that time there was 15 persons working for the firm.	
During the first 9 months we built a simple system using a small budget in order to rapidly launch and test a broad range of new value adding mobile services to Finland, Sweden, Germany, and the UK. In parallel we built a more sophisticated technology platform preparing for the rapidly growing user base and for further steps in internationalization. The technology investment (and ROI) was based on growing volumes and plans for further service launches into new geographies.	The biggest challenge was the scalability of the platform as the number of users increased extremely fast... R&D and business development spent most of their time on this. The old platform had to be thrown out and a new one had to be built in an incredible hurry as the number of users reached the millions… this was a real technical challenge.

During the first year different materials and methods were tested. The fact that we could leverage on existing technologies was critical… we did not need to invent new materials but could refine existing knowledge. We had two foreign clinicians the input of whom was very important. The developed materials and methods are still in use. Based on this we can productize new ideas very fast. The platform can be used to produce orthopedic, sports medicine, and spinal surgery products.

When the firm evolved we concluded that the markets for this service are international and that the head office should be moved to London. Thus, the office was moved to London and the CEO and his second man moved there. Also, the marketing was moved to London and an international personnel was hired. All R&D remained in Finland. We had a few marketing companions who created visibility for the firm in other countries. We wanted to create a brand since this a consumer product.

We focused on the international markets from day one. The point was that if we can not push through the products in the U.S. we have only bad alternatives left… an international breakthrough will be impossible.

We were developing a product with a very small market in Finland. Concentrating the operations here would significantly restrict the business opportunities as there are no customers here. Furthermore, running pilots in Finland can lead to a situation where the product is totally wrong for bigger markets.

We felt that we have only one potential customer in Finland… On the other hand there were a limitless number of potential customers in the U.S.

We founded a subsidiary in the U.S. for our most important customers so that there would be a legal entity they could do business with in the U.S… It would have been a big disadvantage to operate from Finland… Even signing deals was very hard if you did not have a legal entity in the U.S.

I started to develop the software by myself to explore the product idea and technical limits. When the trial seemed to have potential for a product, I hired coders from St. Petersburg due to the lack of finance to create a Finnish software team. The cost of coding in St. Petersburg was less than one quarter of doing it in Helsinki. Later, also Finnish personnel were employed and part of the Russian team relocated in Helsinki.

From a financial perspective it is worth keeping in mind that building a firm in the mentioned way is utterly expensive. This implies that costs should be saved whenever this is possible without sacrificing quality. Against this background the attitude of policy makers', exemplified by the following comments, is somewhat surprising,

"*We do not try to stop rational internationalization… But if some type of know-how is available in Finland but it can be bought cheaper abroad we explicitly do not support buying it from abroad just for cost reasons. We feel that this would be to willingly weaken Finland's competitive position.*"

"If some know-how can not be bought from Finland we can include buying know-how from abroad in our financing... It brings technology and know-how to Finland. But if Finnish know-how is just as good but the labor costs are smaller elsewhere we do not want to support it."

The mentioned policies mean that the same institution that financially supports ventures for the benefit of taxpayers is willingly making it harder for them to compete with their international competitors by imposing higher costs. In addition, it could be argued that the know-how sustained in this way is not attractive in the eyes of foreigners, or other Finnish firms for that matter, as the same competencies are available elsewhere at a cheaper price.

As is revealed by the comments in Table 5-3 obtaining distribution deals and growth-phase financing is likely to require technical and commercial proof-of-concept. This means that the technical and commercial viability of the products/services has to be proven before distribution deals and/or growth-phase financing can be attained.

Table 5-3. Evidence from the case studies regarding technical and commercial proof-of-concept.

Firm management	Venture capitalists
	The initial investors had to fund the riskiest phase. When the distribution deal was made (letter of intent) international venture capitalists became interested. The needed credibility to raise the funds needed for the next development phase was attained.
We developed our products very fast and started to offer them to all world class players… they were interested in the products but wanted to see results from long-term clinical trials and the reaction of the market. If we would have cooperated with them at that point we would not have been building our own brand but been working as suppliers which would have radically changed the nature of the business… when you do not control the brand the spilt between distributor and producer becomes unfavorable for the producer.	The firm lacked marketing talent. Almost one year was lost on unfruitful discussions with potential distribution partners… lack of trust due to unproven products.
	An own distribution network with limited reach was built to prove the products commercial potential. A complete product package was brought to market and customers were convinced that they could save up to 50% by moving to the firms products. As the market share increased and the customers were pleased with the products a distribution deal could be negotiated with a global player.
	It was necessary to found an own organization to get experts to take the products to customers to prove to them that they work and are competitive. When the firm gained market share big multinational companies got interested and a distribution deal was made.

	A second funding round was planned in 2002… the plan was to raise 20-25 MEUR to put up full scale production. The firm had an option contract with a multinational company for them to use the product in their own products. They had one year to decide whether they would use their option… in that case production would have started in 2006. The reason why they did not execute their option was most likely… it was never mentioned as such... that they got a marketing permit for their own old product in the U.S. They used our firm's product as a back-up in case their old product would not have passed the regulatory process. The fact that they did not execute their option also meant that the growth-phase funding round failed because no venture capitalists wanted to invest before they knew if the multinational company was to use its option. Furthermore the income from the product could have been used to develop own products to market. The decision also meant that the personnel were reduced and that development projects were cut.

Proposition 4: The technical and commercial viability of the products/ services must be proven before the firm can reach distribution deals and raise growth-phase venture capital.

The case studies, as exemplified by the comments in Table 5-4, also show that it is of utmost importance that sufficient scientific/technological knowledge exists not only within the firm but also in the geographical vicinity of the firm.

Table 5-4. Evidence from the case studies regarding importance of knowledge base in area.

Firm management	Venture capitalists
We are bound to the area due to the knowledge in biomaterials present here. The university produces engineers many of whom we have recruited… we will continue to do so.	
When our operations become more focused on biotech the fact that we do not have knowledge on developing products classified as drugs in Finland will be a problem… especially competent managers are rare. This kind of knowledge can be found abroad much easier… different educational programs than in Finland. We will build research laboratories where the knowledge is and send people there to work for a while to enable knowledge transfer.	The R&D function will stay where it is because of the knowledge in the area, especially at the University. The headquarters may move abroad…
	It helped a lot that the founders had worked for a similar firm and done similar things. They knew the surgical needs and the opinion leaders in the field. The opinion leader attracted interest for the firm even though he was an owner. A worldwide scientific and R&D network was built. Thanks to the founders' networks all the top names in the relevant fields joined the scientific network of the firm.
We knew a logistics professor in the U.S. that helped us get started… The logistics professor was critical for getting things started as he had a lot of contacts in the U.S… We got a couple of big customers and the operations rolling.	

Finland is a small country with knowledge centers that can succeed only if they focus on a narrow enough area… resources are limited especially when it comes to commercialization. We try to build contacts in all directions.

By being around and having a good product we were able to build ourselves a name in specialist circles. When big firms make decisions they always have a couple of gurus who actually make the decision… these people learnt to know us. Outside of specialist circles our brand was unknown. In terms of distribution channels we thought a lot about what would be a distribution channel that would enable fast growth. We were not able to come up with a good solution… a specialist product requires special know-how from the seller.

The obvious implication of the above mentioned statements is that it is important for firms to have world class scientific and technological knowledge in their near vicinity to draw form. However, top scholars also have credibility and good contacts in the international scientific community and can, thus, open doors to international top scholars. These contacts are extremely valuable, especially in the early days of the firm, as these top scholars often become members of the firms' scientific advisory boards and/or partners with whom for example clinical trials can be executed or prototypes can be tested. Moreover, every field has its so called opinion leaders and if these persons can be engaged in promoting the firm and its technology this can have an enormous impact on the legitimacy of the firm, its technology, and its products. The created interest makes it much easier for the firm to find partners and customers. Furthermore, the fact that world class scientific and technical know-how is present in the geographical vicinity of the firm means that the firm has a pool of skilled persons from whom employees can be recruited at its disposal.

> *Proposition 5: High-technology firms are much more likely to succeed if they are active in areas where world-class scientific and technological know-how exists in their geographical vicinity.*

A very important realization, clearly discernable from the citations in Table 5-5, is that emergent high-technology firms are bought from countries with small home markets not because of access to market but because of the technology and/or business idea. The underlying notion is that the technology and/or business idea can be copied and scaled in other markets and/or put into a global distribution network. This setting is in

the best interest of both the acquirer and the seller. The acquirer gets access to a valuable technology and/or business idea whereas the seller gets her products/services commercialized globally, something that would have been impossible using only internal resources.

Table 5-5. Evidence from the case studies regarding motivations for emergent high-technology firm exits.

Firm management	Venture capitalists
The need for big volumes was one reason why we initiated discussions with the world's biggest multinational companies. We had a platform that was by far the best in the world. We had extensive market knowledge from 4 countries and could help a Group to rapidly roll out standardized mobile services into tens of new countries from a centralized location. Our negotiating power with candidate acquirers built on these factors.	
The exit process was initiated because we needed 20-25 MEUR to commercialize our new project. At the same times sales doubled every year which meant that a net working capital expansion of 15 MEUR was necessary.	
The exit process was initiated to find funding for the firm's operations so that it would not go bankrupt.	Equity and a partner were needed for the operations to continue.
The biggest reason for initiating the sales process was that we could not come up with a distribution strategy that would make us big fast… Because specialist know-how is required in the distribution channel explosive growth was hard to find in another way.	
The buyer was chosen based on strategic dimensions - Within the Telefonica Group we had all the ingredients to create a "dream team". Telefonica Moviles owned the leading mobile network in Spain, operated mobile networks in several Latin American countries, and was expanding into Europe. Terra Networks / Lycos had Internet portals in over 40 countries and access to content. Iobox had the best technology platform that could be leveraged to enter several new markets and the knowledge about launching and operating new value adding mobile services.	The acquirer was chosen not only based on price but also industrial synergy… it wasn't the highest bid. The idea was to combine the firm's platform with the platform of another firm and to bring internet to the mobile market. We thought it was an excellent strategy and the management of the firm agreed.
A European investor base gave freedom to act and to finish the projects… an international IPO was the original vision.	The management of the firm was afraid that their views would contrast with the views of an industrial buyer.
We continued with the candidate that was interested in buying the firm. We were not in a position to choose the buyer we felt was best for us.	The acquirer was chosen based on who the negotiations proceeded with. Our negotiating position was very poor as we were out of money and the only reason the firm still existed was the mercy of the debtors. The firm was sold very much under its real value.
The acquirer was chosen because they offered a good price and a future for the firm as an independent entity in a big organization. Our employees also got good future career paths and we got access to an existing worldwide distribution network.	

Proposition 6: Emergent high-technology firms in countries with small home markets are bought because the technology/business idea can be leveraged using economies of scale and scope.

As can be expected even a technology with a great commercial potential can not attract a good sales price if the firm is out of money. In these cases the firms are sold clearly under their real value. This does not mean that the firms could not thrive under their new owners but it does mean that previous owners will not receive a fair price. When it comes to IPOs the reason for initiating most emerging high-technology firm IPOs seems to be a need for capital. Consistent with theory IPOs seem to be preferred to trade sales because they give freedom to act and control back to the founders/managers. In more formal terms,

Proposition 7: Firms in financial distress will receive a poor sales price no matter how promising the underlying technology/ business idea is.

Proposition 8: Emergent high-technology firms initiate IPO processes to raise capital needed for the expansion of operations and product development. An IPO is favored over a trade sale because it returns control to the founders/ managers.

Venture Capitalists' Influence on Firms' Pre-Exit Development and Exit Successfulness

Prior research has suggested that the difference in behavior between venture capitalists largely depends on the country of origin of the venture capitalist (e.g. Hursti and Maula, 2002). The data from this research indicates a different view: Seed/start-up venture capitalists seem to behave differently from growth-phase investors. These results are irrespective of the venture capitalists home countries. More specifically, seed/start-up-phase venture capitalists seem to understand the technology/business of their portfolio firms better than later stage venture capitalists and are more active in developing the firms. They also have more patience and a longer-term investment perspective. On the other hand, growth-phase venture capitalists appear to be quite passive in developing their portfolio firms. However, they have better international contacts, e.g. to investment banks, which tend to be very valuable in the exit phase. Growth-phase

venture capitalists also become much more active in the exit phase and usually take the lead at this point of the venture capital cycle. The citations regarding venture capitalists' influence on firms' pre-exit development and exit successfulness can be seen in Table 5-6. These findings are,

> *Proposition 9: Seed/start-up-phase venture capitalists understand the firms they invest in better, are more active in developing them, and have more patience as well as a longer-term perspective than their growth-phase peers.*

> *Proposition 10: Growth-phase venture capitalists activate themselves in the exit phase and their contacts to e.g. financial institutions are important in moving the exit process forward.*

Table 5-6. Evidence from the case studies regarding venture capitalists' influence on the successfulness of cross-border exits

Firm management	Venture capitalists
The best venture capitalists are the seed and growth-phase investors because they are ready to work with a long-term perspective. They understand how to build the business because they have been present from the beginning. The venture capitalists who invest in growth-phase firms want to make fast profits… their investment strategies are not in line with the best interest of the firm.	
	[Seed/start-up-phase venture capitalist] We built credibility for the firm by giving it a big balance sheet. It enabled hiring experienced managers with good positions in established firms. The other thing we did was to push the guys forward… told them to go to international investment seminars even though they felt they did not have enough experience… we arranged the premises and invited investors to meet the firm. We also helped in recruiting international personnel… participated in interviews for example. It was very hands-on. Of course we do not do other peoples' work but we bring forward things that need to be done… and provide help when it is needed.
The VCs that invested in a later stage were not that hands-on. However, they had very important contacts and could open important doors for us.	The lead investor in the second round was the biggest but by no means the most active investor. The first round investors were the most active through the whole process even though international investors entered the scene. Their way of working is more hands off in general. They rather hire a professional management and rely on them run the show.
I met a venture capitalist [seed/start-up-phase] that seemed to be able to help us with a lot more than capital. I felt that I can learn a lot from this guy… The capital raised helped to keep the employees in the firm… keep the firm together.	

The capital we received from the venture capitalist [Seed/start-up-phase] enabled us to hire more personnel which gave credibility to our operations. The venture capitalist also had a very clear picture of how a firm like ours should be developed… that helped a lot. Especially in planning and controlling sales and developing our partnering strategy we received a lot of help. The psychological effect on our employees was also a big thing… Now we were in the same league as the other guys. And of course the fact that we could tell customers that this amount of money has been invested in us increased our credibility.

When the exit process started the large international VC played a significant role … they had a track record for completing large transactions.

The first stage investors were committed to the process… the IPO valuation was not a key issue. The later stage foreign investors were different… the biggest struggle was whether we could get the investment banker to sign a paper with a too high pre-money valuation... maybe better for the venture capitalists short term exit story but taking into consideration lock-ups etc. their approach is theoretical and irrelevant.

In the exit stage the second round lead investor became clearly more active. This had to do with the fact that our adviser was working in the same premises.

There were clearly two camps, the old and the new investors… problematic in terms of the revoking the partnership agreement. The new venture capitalists tried to use the situation to their favor and treat the person-owners poorly.

Especially the network of the growth-phase venture capitalists helped in contacting the investment banks.

However, it is good to keep in mind that all venture capitalists are different and that it thus is dangerous to categorize. This also means that it is critical for Finnish venture capitalists to have ongoing relations with their foreign peers as this is the only way to learn how they actually operate and which ones are reliable partners. This point is illustrated by the following comment, expressed by a policy maker,

"Funding biotechnical firms usually stops because they can not raise their own part of the funding… We usually provide about 50% of the funding. From where the rest is raised… we are usually deeply involved in the negotiations… then it is discovered that the deal did not take place because the venture capitalist changed her terms at the last minute... the term sheet and everything is ready and then they say that everything is otherwise ok but the value of the firm is 30% lower. Things like this; also dirty methods have been used. The term sheet includes everything but the price which has been agreed verbally... the new value just appears. This mainly concerns cross-border venture capitalists... they take advantage of the situation and try to improve their conditions at the last minute."

The Effect Cross-Border Exits Have on the Domestic Dimension in the Operations and Decision-Making of a Firm

Regarding the placement of operations the simple fact is that a firm competing on an international basis will place its operations where it makes most sense from a business perspective. Many of the determining factors when this decision is made, e.g. geographical location of the markets, exchange rates, access to experienced personnel, and the location of current manufacturing plant(s), can not be affected in the short term if at all. For example if the manufacturing costs constitute only a small part of the sales

price manufacturing can take place in Finland without it constituting a competitive disadvantage even though the costs, especially personnel, are higher than in many other countries. However, if the manufacturing costs are large in comparison to the sales price manufacturing is very unlikely to take place in Finland. This is also in the interest of the Finnish society since manufacturing products at a significantly higher cost than competitors would harm all other operations of the firm as well in the long term as the firm would be uncompetitive.

When knowledge intensive operations, e.g. R&D, are concerned the operations will be placed where the best know-how is available. For Finland this means that if a firm operates and moves into areas where the Finnish know-how is world class R&D operations are likely to stay in Finland. Otherwise they are likely to move. Table 5-7 includes citations that exemplify the above mentioned conclusions, summarized below,

> *Proposition 11: Firms competing on international markets will place their operations where it makes most sense for the business as a whole. In the long-term this is also in the best interest of the society as a whole. The challenge is to create an environment where high-technology firms thrive.*

Table 5-7. Evidence from the case studies regarding placement of operations, control over strategy, and capital availability.

Firm management	Venture capitalists
An international firm must operate multinationally. England is an example: In addition to that we have to serve the financial markets there commercialization is much easier to do from there because of the presence of marketing professionals who have work experience from similar firms.	
The dollar-euro exchange rate drives us abroad as most of our revenues are in dollars and most of our costs are in euros… when will it be rational to move the production to a dollar country? Logistics is another issue… it is possible that we will move packing closer to the customer to reduce transport costs. These kinds of things must be taken into consideration.	
The fact that we have five unprofitable years behind us binds us to Finland due to losses that are carried forward.	

The firm was impacted by the fact that the Telefonica Group changed CEO from an innovator to a more conservative back-to-basics person. That triggered a change in the whole Group. The big investments were the UMTS licenses bought for expansion into new European countries - A firm worth a couple of hundred millions was small compared to that. The new strategy focused on current strengths, not future capabilities.

I would say it did not make sense for the Group to have small operations in the Nordic countries, Germany, and England because they exited the markets as an operator.

In 2003 we had four employees… then we were able to sign a license agreement with a pharmaceutical firm and secure more financing from Tekes… at the time of the sale the firm had 15 employees. After that the number of employees rose swiftly to 40 where it has stayed. Most of the employees are former employees of the firm and most of them work, as has always been the case, with pharmaceutical product development.

The operations of the company are clearly divided today… a service and a drug development part… our role has become stronger as the future of the firm is dependant on drug development. The service business is a buffer that provides the company with cash that can be used for drug development. If there are difficulties on the drug development side we have time to think and develop a new strategy for our drug development… we have other incomes. This is very important for us… the company is not solely dependent on development phase drugs.

We are in a position that makes it possible for us to strengthen our pharmaceutical development and production business by acquisitions. We would not have been able to do this before…

As a larger company we have more credibility… maybe we are more trustworthy and thus more dependable in the eyes of potential partners.

I am pretty sure that the operations will remain in Finland… In this type of organization the operations are usually left where they are if big efficiency gains can not be achieved by centralizing operations. In the past employees were moved from place to place but it has become clear that it is expensive and that employees start leaving the company for family etc. reasons.

In the end the acquirer just sucked out the technology. The earnings logic was before its time… the market and the needed supportive technology was not ready.

The development of the firm post-exit is best described by the fact that it now has over 40 employees compared to four at the time of the exit.

The parent company has given the firm access to a preclinical trial infrastructure. The entity also saves costs and the contact network is bigger than what could have been built using purely Finnish forces.

A production facility where full production can take place exists. Building similar premises elsewhere is expensive. Outsourcing the production is also difficult as this is a specialty business. The idea is to automate the production which means that production costs are not as critical as in many other types of businesses. If the sales margin is high enough cutting the production costs by 50% is not that important if they constitute only 2% of the sales price. In other words profitable production can take place in Finland.

A factor that binds many high-technology firms to Finland is the principle of carrying losses forward. This is because almost all of these R&D intensive firms have several unprofitable years behind them, i.e. substantial tax benefits awaiting them when/if they become profitable.

Proposition 12: The losses are carried forward-principle binds R&D intensive high-technology firms to their country of origin at least in the mid-term due to substantial future tax benefits.

If an emerging firm is bought by a big multinational enterprise the strategy of the enterprise will dictate the future of the firm and the placement of its operations. However, if the firm is sold to a medium sized company the strategy of the firm may be an integral part of the strategy of the company. One underlying reason is the structuring of the deals: Larger companies often by small firms using cash whereas smaller companies often use their own shares. The former implies a full trade sale exit whereas the latter implies a partial trade sale exit (see Chapter 1, Key Concepts).

Proposition 13: Other things being equal, the larger the acquiring company, the less control the firm will have over its future, i.e. the more dependent it will be on a strategy based on factors independent of itself. An IPO signifies maximum control over ones own fate.

For many emerging high-technology firms with a high cash-burning rate the ideal situation is to be bought by a medium sized company with a stable cash flow that can be used to fund the development and commercialization of the new products/services. This implies continued control over ones own faith combined with increased financial resources which secure continuity in product/service development, increased credibility in the eyes of partners and customers as well as the possibility to acquire needed resources and capabilities.

Cross-Border Exits Influence on the Development of the Venture Capital Market and the Capital Available to Emerging Firms in Countries with Small Home Markets

Simply put, cross-border exits are a must if a venture capital market is to exist in Finland. As the high-technology industries are largely financed with venture capital also their existence is dependent on cross-border exits. The reasons for this are that the

stock market is inefficient in Finland – for example high-technology firm analyst coverage is more or less non-existent - and that potential trade sale acquirers, i.e. sufficiently large companies in the relevant industries, are very rare. These findings are illustrated by the citations in Table 5-8 and summarized as follows,

> *Proposition 14: Finnish high-technology firms that receive venture capital financing should by default be expected to be exited abroad.*

Table 5-8. Evidence from the case studies regarding the influence cross-border exits have on the development of the venture capital market in countries with small home markets.

Firm management	Venture capitalists
	On the pharmaceutical side there are no exit possibilities in Finland. The exit targets for all pharmaceutical projects are big pharmaceutical firms. The situation is the same in the medical technologies industry.
Finland is so small that sufficient volumes can not be found in Finland for a firm like this which, after all, operates in a niche business.	It was clear from the beginning that the firm would not be sold to Finland. The business is not in Finland… maybe a couple of hundred thousand users but the millions come from elsewhere. We wanted the firm to internationalize and conquer the world. I don't think anyone even thought about selling the firm to Finland.
	The exit markets are limited in Finland. Sweden is a better market and the Americans' are very interested. It is becoming more common to merge Finnish firms with U.S. firms. We remain as owners in a bigger entity. The liquidity of the financial markets is so much better in the U.S. that we believe that the merged entity can be listed on NASDAQ… this is not possible for purely Finnish firms.
	A valuation gap exists between Finland and for example the U.S. The only reason for it is access to capital markets… and maybe access to experienced management.
A European investor base gave freedom to act and to finish the projects… an international IPO was the original vision.	
For an IPO to be beneficial in other ways than collecting money the share has to be traded at a sufficient volume. This requires analyst coverage… I can not name a single analyst who knows this industry in Finland, or in the Nordic countries for that matter.	An IPO in Helsinki is not a viable option due to the lack of markets, poor liquidity, and a negative media climate. The situation in Stockholm is the same... very poor aftermarket, no analysts.
Our plan is to launch an own sales organization at some point because we give half of the top line and margin away now… we also lose control and access to the feedback loop. As other similar firms have done we want to make the product known and build the brand… at an appropriate time we will take control of the sales process.	
We could not find… in fact it would be impossible to find… a buyer with the required financial resources. There are not that many pharmaceutical firms in Finland…	Especially when it comes to pharmaceuticals all exits are cross-border by default. We do not even think about the possibility of a domestic exit.

On the pharmaceutical side Finland's problem is that only one possible exit partner, which is unreliable and hard to work with, exists. If a comparison is made to Sweden or Denmark who have an international pharmaceutical industry the base is very different.

There was not a single good acquirer candidate in Finland that would have paid a fair price.

Cross-border IPOs are especially critical if a pharmaceutical and medical technology industry is to evolve in Finland. This is because the usual life-cycle of these firms involves licensing out less and less of the operations until they can all be included in the own firm. The first products are usually licensed out before phase three of the clinical trials. The second generation of products is usually developed in house but marketing and distribution is licensed out. The final stage is to also include marketing and distribution in the own organization. Moving from one stage to the next requires significant amounts of capital which are likely to be attained only through an IPO and possibly later seasoned offerings. As the Finnish stock market, not least due to the lack of analyst coverage, is a hostile environment for pharmaceutical and medical technology shares cross-border IPOs are a must if a pharmaceutical and medical technology industry is to evolve in Finland.

Based on the mentioned facts the attitude of policy makers', exemplified by the following comments, seems rather artificial,

"The criterion for us to support a cross-border trade sale of a firm we have supported is that… If it is the only way that the results can be utilized then we will probably support it."

"The welfare mechanisms must be evaluated. They are different than the ones from, say, ownership… What is the know-how advantage for Finland, how does the know-how spread to other parts of the Finnish innovation system, and how tax gains are accrued directly... These types of things."

"When our consent is asked for a cross-border trade sale we consider if the sale is in the tax payers interest meaning that they benefit from it… Above all this means that the jobs and important activities remain in Finland. If the operations remain in Finland even though the ownership moves elsewhere... and even if the intellectual property rights are lost... if the operations remain in Finland than we can give our consent but this always involves case specific considerations. Rough principles exist... the cases are always individual."

The point is that since high-technology firms that receive venture capital financing are likely to be exited abroad this should be assumed when public funding is admitted to them. Today public funding agencies try to react to cross-border exits when they are already being negotiated. Harm is done to the firms and to the Finnish society by

depriving firms' access to necessary funding and complementary assets at a point when a lot of energy has been put down to reach these goals. Furthermore, if the rules are not clear, pubic funding is considered a 'political risk' by foreign investors, causing discounts and thereby destructing entrepreneurs, investors, and taxpayers wealth. This is because unclear rules and restrictions limit the number of interested buyers, i.e. demand, and thereby decreases valuations. As a result of the mentioned realities, the rules regarding cross-border exits should be clear when funding is given to firms so that they and potential acquirers can plan their actions based on them. In other words the policy towards cross-border exits should be proactive rather than reactive as it is today.

5.3. CONCLUSIONS FROM THE CASE STUDIES

The results of the case studies indicate that high-technology firms should be built around product platforms and on an industrial scale in an international manner from the very beginning of their existence to maximize their likelihood of success. An underlying reason for this is that in the fast paced high-technology industries technologies and innovations that are not commercialized as swiftly as possible are likely to be bypassed by other similar technologies and innovations. Swift international commercialization also increases the likelihood that the products/services can capture a market of sufficient size to enable the recouping of the required R&D investments.

The firm's chances of success are also increased if it operates in an area where world-class scientific and technological know-how exists in its geographical vicinity. Not surprisingly, the results also imply that firms competing on international markets should be allowed to place their operations where it makes most sense from a business perspective. In the long-term this is also in the best interest of the society as a whole.

Firms should realize that venture capitalists that invest in firms that are at different phases of their development behave differently. Seed/start-up-phase venture capitalists mostly have a good understanding of the firms they invest in and are active in developing them. Growth-phase venture capitalists are often hands-off investors that activate themselves only in the exit phase. Firms should also acknowledge that before they can raise growth-phase venture capital they have to prove the technical and commercial viability of their products/services.

Policy makers should make it clear to themselves that Finnish high-technology firms that receive venture capital financing will most likely be exited abroad. This is to a large extent due to the fact that in countries with small home markets emergent high-technology firms are mostly bought because the technology/business idea can be leveraged using economies of scale and scope. In other words, large companies can cheaply multiply a technology, which has often been very expensive to develop, using their existing structures. Furthermore, the products/services can be distributed using existing distribution channels, which are expensive to build but cheap to use once they exist. Thus, the technology can be brought cheaply to a large number of potential customers. The mentioned abilities are also the underlying reason for why foreign acquirers are often willing to pay a higher price for Finnish firms than domestic ones – Finnish acquirers lack the structures to leverage the technologies. Based on these findings the policies regarding the selling of firms that have received public funding to foreign acquirers should be made proactive instead of reactive as they are today. In this way the firms and the venture capitalists that back them could conduct exit negotiations without a fear of last minute demands from public agencies.

All the propositions of the case studies and their implications for ventures, venture capitalists, and society as a whole are presented in Table 5-9.

Table 5-9. Implications of the findings from the case studies. The propositions are numbered as in the text above.

	Implications for		
Propositions	Ventures	Venture capitalists	Society
1. High-technology firms should be built around product platforms not single product ideas.	Firms should not be founded around single products/services, i.e. too small target markets compared to incurred R&D costs.	Firms with single products/services and too small target markets should be merged with complementary firms at an early stage to enable higher valuations, i.e. raising more money, so that operations can be built in anticipation of future, for the recouping of R&D costs sufficient, volumes.	Firms that develop product platforms not single products should be prioritized when funding is given to firms for development projects.
2. The most successful high-technology firms are the ones that build their operations on an industrial scale from the very beginning.	The firm should from the beginning be built in anticipation of the target markets and volumes. This means that all operations should be built so that they can handle the anticipated volumes from the very beginning.	The goal should be to find enough funding for the chosen firms so that they can build their operations on an industrial scale from the very beginning. Finding additional investors should thus be a high priority.	Several firms should not be kept in a state of constant under-financing but the resources should be focused on a limited number of ventures that develop product platforms that enable the recouping of the needed investments.
3. Building a firm on an industrial scale from the very beginning means that its operations must internationalize early to build awareness of the firm in its main markets if the required investments are to be recouped.	For the investments needed to build a firm on an industrial scale to be recouped operations should internationalize at the latest when sales begin.	Know-how and contacts regarding internationalization should be created so that they can be passed on to ventures. In this way mistakes can be avoided and time can be saved.	Internationalization should not be prohibited but endorsed if born globals are to succeed in a global competition.
4. The technical and commercial viability of the products/services must be proven before the firm can reach distribution deals and raise growth-phase venture capital.	An own sales and marketing department with limited reach may be needed before distribution contracts with multinational firms can be reached and growth-phase financing can be attracted.	The firms should be provided with enough capital so that the products/services commercial potential can be proven before growth-phase financing is needed.	More domestic seed/start-up-phase venture capital is needed as foreigners that invest in Finland mostly focus on growth-phase financing.
5. High-technology firms are much more likely to succeed if they are active in areas where world-class scientific and technological know-how exists in their geographical vicinity.	Firms should be founded in geographical areas where the know-how related to the firm's technology/business is strongest.	Firms that come from areas with world-class know-how in their particular field should, other things being equal, be preferred over other firms.	Funding should focus on firms operating in areas where the Finnish know-how is world-class. Universities should focus their research efforts on areas where they have a chance of becoming among the best in the world if they want to spur entrepreneurship and the founding of successful University spin-offs

6.	Emergent high-technology firms in countries with small home markets are bought because the technology/business idea can be leveraged using economies of scale and scope.	It is more important to develop the products/services to a point where they have global potential than to use resources on conquering a single small market if the goal is to become a part of an established company with a global reach.	Firms with products/services that can be leveraged by rolling them out globally rather than firms with a strong position in a single small market will enable successful exits.	High-technology firms with insufficient resources to build global operations that operate in areas where no mature multinational firms exist in Finland are likely to be sold abroad.
7.	Firms in financial distress will receive a poor sales price no matter how promising the underlying technology/business idea is.	Pursuing R&D projects at the expense of financial health is not a good strategy since it leads to reduced negotiating power, also over issues other than price, in the exit process.	To achieve a successful exit the firms' finances must be kept healthy. No technology, no matter how promising it is, will attract a good price if the firm is in financial distress.	If it is seen as an objective to keep Finnish firms from being sold abroad too cheaply public financing should not be denied on the grounds that the firm is likely to be sold abroad. Furthermore, firms negotiating position in the exit process should not be made weaker by calling debt etc. back with the argument that it is in the best interest of the Finnish society that they stay in Finland.
8.	Emergent high-technology firms initiate IPO processes to raise capital needed for the expansion of operations and product development. An IPO is favored over a trade sale because it returns control to the founders/managers.	If the goal is to retain control over the firm through an IPO it should be developed in a way that enables selling a future growth story to potential shareholders. If developing the firm independently in a way that enables a growth story is implausible for financial reasons an IPO is very unlikely to be possible.	Founders/managers are likely to prefer an IPO over a trade sale as it returns control to them.	IPOs should be favored over trade sales if it is seen as preferable that the decision making in the firms stays in Finnish hands.
9.	Seed/start-up-phase venture capitalists understand the firms they invest in better, are more active in developing them, and have more patience as well as a longer-term perspective than their growth-phase peers.	Important to acknowledge that venture capitalists that focus on different phases behave differently and to try to achieve a ownership structure where the selfish strivings of the different owners balance each other.	Important to develop lasting relationships to foreign growth-phase venture capitalists so that their way of working is known before the cooperation is begun.	Important to create an environment where the competition between venture capitalists is fierce enough to select out the ones that behave in a morally questionable manner. In other words an environment where an efficient market for growth-phase venture capital can develop should be strived after.
10.	Growth-phase venture capitalists activate themselves in the exit phase and their contacts to e.g. financial institutions are important in moving the exit process forward.	Especially foreign growth-phase venture capitalists can be critical for the firm to attain an exit of its liking, especially if the firm wishes to be exited abroad.	Although especially foreign growth-phase venture capitalists drive a hard bargain their help can be invaluable in driving the exit process forward and in finding a suitable exit target.	Foreign venture capitalists should be welcomed to the Finnish market more actively as they can provide critical help in exiting firms and thus in activating and effectuating the domestic venture capital market. Rules similar to the ones applied to them by other countries competing for their capital should be applied to them also by

			Finland.
11. Firms competing on international markets will place their operations where it makes most sense for the business as a whole. In the long-term this is also in the best interest of the society as a whole. The challenge is to create an environment where high-technology firms thrive.	Firms should try to avoid financing and other contracts that restrict their ability to place their operations where it makes most sense from a business perspective.	Venture capitalists should try to avoid to pulling their portfolio firms' operations to their home market if this is not in the best interest of the firms.	As many of the factors determining where firms will place their operations can not be affected, at least in the short and medium-term, more harm than good is done by trying to influence such decisions. The best way to secure that firms decide to place their R&D operations in Finland is to focus on developing world-class know-how that is valuable to the firms.
12. The losses are carried forward principle binds R&D intensive high-technology firms to their country of origin at least in the mid-term due to substantial future tax benefits.	Several unprofitable years means that it is beneficial to keep the firm's headquarters in Finland until the gained tax benefits are used.	When Finnish firms are merged with foreign ones pre-exit it is beneficial to keep the headquarters of the Finnish legal entity in Finland until the gained tax benefits are used.	As the losses are carried forward principle binds most high-technology firms to Finland, at least in the mid-term, due to their heavy R&D activity that bets on future revenues other measures are unnecessary. Furthermore, such measures are likely to worsen the competitive position of the firms as there are probably well motivated business related reasons for why the firms want to move abroad.
13. Other things being equal, the larger the acquiring company, the less control the firm will have over its future, i.e. the more dependent it will be on a strategy based on factors independent of itself. An IPO signifies maximum control over ones own fate.	If the firm is sold to a large multinational enterprise its future will probably be dependent on a strategy that has been developed without taking the firm into consideration. More consideration of the specific needs of the firm are likely to be taken the smaller the acquirer is.	Founders/managers are, other things being equal, likely to prefer an exit route that gives as much control as possible to them, i.e. IPOs over trade sales and smaller acquirers over bigger ones.	An exit route that gives as much strategic importance as possible to the firm in the new entity should be favored if it is seen as preferable that the needs of the firm are taken into consideration as mush as possible in the new entity.

14. Finnish high-technology firms that receive venture capital financing should by default be expected to be exited abroad.	As high-technology firms that receive venture capital should expect to be exited abroad attracting venture capitalists from the preferred exit country might be preferable as these venture capitalists are likely to be better informed about exit possibilities as well as better at executing the exit process in their home country than their foreign peers.	As it is hard to exit high-technology firms in Finland attracting foreign venture capitalists, which can search for exit possibilities in their own countries, to the investment syndicates should enhance the chance of a successful exit.	The fact that high-technology firms that receive venture capital financing are likely to be exited abroad should be taken into consideration when public funding is admitted to these firms rather than to try to react to it when a cross-border exit is already being negotiated. Harm is done to the firms and to the Finnish society by depriving firms' access to necessary funding and complementary assets at a point when a lot of energy has been put down to reach these goals. The rules should be clear when the funding is given so that the firms could plan their actions based on them instead of living in uncertainty. In other words the policy should be proactive rather than reactive as it is today.

6. RELIABILITY AND VALIDITY OF THE RESULTS

This chapter discusses the reliability and validity of the empirical results of the study. Reliability refers to the repeatability of the results. In other words, a measure is considered reliable if it produces the same result every time, i.e. if the measurement error is minimal. Validity refers to the accuracy in measurement. This is to say that a measure is considered valid if it actually measures what it is intended to measure.

6.1. RELIABILITY

This study employed three distinctive research methods: A literature review, a quantitative study, and case studies. The use of different research methods ensures that the empirical material is versatile and rich.

Overall, the reliability of the quantitative study appears to be good. This conclusion is drawn because the empirical data of the quantitative analyses was wide and most of the results had good statistical significance. Furthermore, the Heckman sample selection methodology was utilized in the regression analysis to ensure that selection bias was not present. The reliability of the quantitative study is also increased by the fact that only objective measures were used and by the fact that it is easily replicable because all the data used can be acquired from public sources.

The reliability of the case studies should also be good. First, only key informants (John and Reve, 1982), i.e. the CEOs, other members of the management team, and venture capitalists that sat on the boards of the firms at the time of the exit, were interviewed. These persons can be considered to be knowledgeable in the development of the firm taking into consideration the areas studied. Second, rich secondary data was used to enable triangulation. In this way the information told by the interviewees could be compared to objective figures and if inconsistencies were identified an explanation could be requested from the interviewee. Thirdly, the presence of the interviewer in itself increases the reliability of the data as it ensures that the interviewees consider the questions appropriately and answer with care (Denzin and Lincoln, 1994).

The empirical results of this study are mainly in line with the previous studies, which seem to confirm the reliability of the methods used. Thus, the overall reliability of the study can be regarded to be good.

6.2. VALIDITY

The first step in ensuring the validity of the results of the study was to conduct an extensive literature review to identify and understand the relevant phenomenon and concepts in theory and in practice. Specifically, prior research was examined to find previously validated well-known measures, i.e. operationalizations, which could be used in the quantitative study in order to ensure that the validity of the quantitative study is acceptable.

The biggest concern regarding the validity of the quantitative study stems from the less than optimal quality of the data in the databases used. This is so even though the best databases available were used. Thus, although the data was checked whenever possible using firm and stock market home pages, it is possible that some erroneous data points remain in the used data. However, due to the mentioned actions to improve the quality of the data this problem should not substantially weaken the quality of the data and thus the attained results.

To ensure the validity of the case studies multiple sources of evidence and multiple measures were used. On a more tangible level all the relevant secondary data available on the case firms was gathered and analyzed before the interviews. The semi-structured interviews focused, one at a time, on the most important topics. However, the interviewees were given freedom to include all aspects they deemed relevant. Thus, all issues of importance for the topics under study can be assumed to have been included. All the gathered data was analyzed and used when the final propositions were built. To ensure the reader of the trustworthiness of the interpretations as rich and detailed examples as possible, taking into consideration the need to protect the identities of the interviewees, are provided. Nonetheless, as always, the use of qualitative data has its limitations as the interpretations are those of a single person. As described I have tried to compensate for this using triangulation throughout the case studies.

The results of the quantitative analyses and the case studies support each other and are in line with previous research. This gives confidence to believe that the validity of the results can be regarded as good.

7. CONCLUSIONS

This chapter concludes this thesis with a summary of the empirical results, a discussion of the empirical results, recommendations for ventures, venture capitalists, and policy makers, a presentation of the limitations of the study as well as suggestions for further research.

7.1. SUMMARY OF THE RESULTS

This study includes two interlinked empirical parts: A quantitative study and case studies. These studies examine how cross-border exits are valued in comparison to domestic exits, how venture capitalists influence the successfulness of cross-border exits, how cross-border exits influence the development of the venture capital market and the capital available to emerging firms in countries with small home markets, under what circumstances foreign exits are beneficial for portfolio firms, and what effect cross-border exits have on the domestic dimension in the operations and decision-making of a firm.

The quantitative study, which focuses on European venture capital backed firms, shows unanimously that cross-border exits generate higher returns than domestic exits. This finding should calm the fears that firms are sold abroad too cheaply once and for all. The results from the quantitative study apply to both IPOs and trade sales. However, as the results from the case studies show, firms in financial distress will receive a poor sales price no matter how promising the underlying technology/business idea is and no matter where the acquirer is from.

The finding with perhaps the most implications from the case studies is that Finnish high-technology firms that receive venture capital financing are bought because their technology/business idea can be leveraged using economies of scale and scope. As there are very few Finnish companies with the required size, i.e. the required structures and financial means in place, active in the relevant industries Finnish emerging high-technology firms are likely to be sold abroad. Rather obvious, but no less important, findings are that high-technology firms should be built around product platforms and on an industrial scale in an international manner from the very beginning of their

existence to maximize their likelihood of success. The underlying point is that markets with the required size must be captured as soon as possible to enable the recouping of the R&D costs. Furthermore, the chances of success are increased if the firms operate in an area where world-class scientific and technological know-how exists in their geographical vicinity. The results also imply that firms competing on international markets should be allowed to place their operations where it makes most sense from a business perspective. In the long-term this is also in the best interest of the society as a whole since firms operating in a competitive environment are unlikely to succeed if higher than necessary costs are imposed on them from the outside.

In contrast to previous studies the case studies indicate that venture capitalists that invest in firms that are at different phases of their development, rather than of different origin, behave differently. In general seed/start-up-phase venture capitalists have a better understanding of the firms they invest in and are more active in developing them pre-exit then their growth-phase peers. On the other hand, growth-phase venture capitalists are often very active in the exit phase and their contribution, especially their contacts, may be critical for a successful exit to take place. Furthermore, the results suggest that before firms can raise growth-phase venture capital or attain distribution deals they have to prove the technical and commercial viability of their products/services.

In line with theory, the results indicate that emergent high-technology firms initiate IPO processes to raise capital needed for the expansion of operations and product development. An IPO is favored over a trade sale because it returns control to the founders/managers. For trade sales the results suggest that the larger the acquiring company, the less control the firm will have over its future, i.e. the more dependent it will be on a strategy based on factors independent of itself. The reason for this is, at least partly, that larger companies often by small firms using cash whereas smaller companies often use their own shares. In other words, larger companies often conduct full trade sales whereas smaller companies conduct partial trade sales (see Chapter 1, Key Concepts). Be that as it may, the losses are carried forward principle binds R&D intensive high-technology firms to their country of origin, at least in the mid-term, due to substantial future tax benefits, independent of who the owner of the firm is.

7.2. DISCUSSION OF THE RESULTS

This thesis studies the impact and determinants of success of cross-border exits from venture capital investments. It focuses on the domain of growth oriented entrepreneurship and technological innovation in countries with small home markets. In other words the focus is on firms that need to internationalize to thrive in a global competition. The subject has been studied scarcely, even though foreign exits are of fundamental importance if the venture capital market is to work efficiently in countries with small home markets. The contribution of this study is in filling this void.

The most important implications of the findings of the study are now presented. First of all the fact that cross-border exits generate higher returns than domestic ones means that the view that firms are sold abroad too cheaply is simply unwarranted. No policies should be built based on this misconception. A big reason for why cross-border trade sales generate higher returns than domestic ones is that foreign acquirers have the necessary structures for leveraging the technologies in place. In other words, when large foreign companies buy firms from countries with small home markets they are willing to pay a premium for them as they can cheaply multiply the technology, which has often been very expensive to develop, using their existing structures. The products/services can also be distributed using existing distribution channels, which are expensive to build but cheap to use once they exist. In this way the technology can be brought cheaply to a large number of potential customers. Finnish acquirers, on the other hand, often lack the mentioned structures needed to leverage the technologies and are thus not willing to pay the same price as foreign acquirers. Cross-border IPOs generate higher proceeds and post under-pricing market values than domestic ones probably because of better capital availability, reduced information asymmetry, stricter demands imposed on corporate governance, and increased liquidity due to a wider investor base. For firms backed by venture capitalists the implication of the fact that cross-border exits generate higher returns than domestic ones is that to maximize the financial resources available to them they should arrange themselves in ways that allow cross-border exits to take place without difficulty. Venture capitalists should on their part build trusted relationships to foreign markets and develop capabilities in transforming firms to be ready for cross-border exits. The finding that Finnish high-technology firms that receive

venture capital financing will most likely be exited abroad increases the importance of the mentioned findings. It also means that high-technology firms who raise venture capital should expect to be exited abroad. Policy makers should also acknowledge this when they distribute public funding. Harm is done to the firms and to the Finnish society by depriving firms' access to necessary funding and complementary assets at a point when a lot of energy has been put down to reach these goals, i.e. a favorable cross-border-exit. Thus, the rules regarding cross-border exits should be clear when the funding is given so that the firms could plan their actions based on them.

The most successful high-technology firms are the ones that build their operations on an industrial scale from the very beginning and internationalize as early as possible to build awareness of the firm in its main markets. An underlying reason for this is that in the fast paced high-technology industries technologies and innovations that are not commercialized as swiftly as possible are likely to be bypassed by other similar technologies and innovations. Furthermore, recovering the necessary R&D investments requires that a large enough market is captured as soon as possible. Thus, firms should build all their operations so that they can handle the anticipated volumes from the very beginning, i.e. so that internationalization can take place without the rebuilding of operations. Venture capitalists should, on their part, focus on finding enough funding for their portfolio firms for this to be possible. Finding additional investors should thus be a high priority. For public policy this means that the internationalization of born global firms should not be made more difficult than it is in itself as this weakens the firms' chances of succeeding in a global competition and thus of becoming financial successes.

As internationalization is expensive growth-phase venture capital is very often needed if it is to be successful. However, more often than not, firms must prove the technical and commercial viability of their products/services before they can reach distribution deals and raise growth-phase venture capital. In practice this means that an own sales and marketing department with limited reach may be needed to provide proof-of-concept before distribution contracts with multinational firms can be reached and growth-phase financing can be attracted. Seed/start-up phase venture capitalists should keep this in mind and try to ensure that their portfolio firms have enough capital so that the

commercial potential of the products/services they develop can be proven before growth-phase financing is needed.

In the process of raising capital firms should acknowledge that the value added provided by venture capitalists that invest in firms in different phases of their development is dissimilar: Seed/start-up-phase venture capitalists can help develop immature firms as they usually have a good understanding of the technology/business idea of the firms they invest in. Growth-phase venture capitalists, on the other hand, can provide a lot of help in the exit phase as their contacts, e.g. to financial institutions, can be very important in moving the exit process forward. These generalizations provide rough guidelines but it should be remembered that all venture capitalists, independent of phase, have their individual ways of working. Thus it is important that domestic venture capitalists develop lasting relationships to foreign venture capitalists so that their way of working is known before the cooperation is begun. To get rid of venture capitalists that behave in a morally questionable manner policy makers should strive to build an environment where an efficient venture capital market capable of selecting out bad seeds can develop. One obvious step in this direction would be to welcome foreign venture capitalists more actively to the Finnish market by applying similar rules to them as other countries competing for their capital do. Foreign venture capitalists are important as they, in addition to the capital they supply, can provide critical help in exiting firms. This is because they are almost always growth-phase investors with good contacts and knowledge of their own markets. Thus, cross-border venture capitalists can be invaluable in activating and effectuating the domestic venture capital market.

High-technology firms seem to be more likely to succeed if they are active in areas where world-class scientific and technological know-how exists in their geographical vicinity. This implies that firms should be founded in geographical areas where the know-how related to the firm's technology/business is strongest. From a public policy perspective this means that funding should focus on firms operating in areas where the Finnish know-how is world-class. Furthermore, Universities should focus their research efforts on areas where they have a chance of becoming among the best in the world if they want to spur entrepreneurship and the founding of successful University spin-offs. All the findings and propositions of the quantitative study and the case studies and their

implications for ventures, venture capitalists, and society as a whole are presented in Table 4-6 of Chapter 4.4 and Table 5-9 of Chapter 5.3.

7.3. RECOMMENDATIONS

This part presents some concrete recommendations of actions that ventures, venture capitalists, and policy makers should take in light of the presented findings.

7.3.1. RECOMMENDATIONS FOR VENTURES

The results suggest that almost all Finnish high-technology firms that receive venture capital financing are likely to be exited abroad and that the valuations of cross-border exits are higher than the ones of domestic ones. Thus, firms that receive venture capital financing should arrange themselves in ways that allows cross-border exits to take place without difficulty. In practice this means that e.g. legal structures and corporate governance matters should be in the shape expected by foreign acquirers or stock markets. Furthermore, the due diligence process should be made as simple as possible by having everything ready for the performers of it when they arrive.

In developing the firm pre-exit firms should keep in mind that it is important to build the firm's operations on an industrial scale from the very beginning. This is of the essence because in the fast paced high-technology industries technologies and innovations that are not commercialized swiftly are likely to be bypassed by other technologies and innovations. In other words, the technologies and innovations grow old fast if they are not commercialized. Therefore quality, production, business control, etc. systems should be built in anticipation of the future volumes from the very beginning. Early internationalization is important if the firms are to recoup the money spent on R&D. Thus, the firms' should internationalize to their target markets as soon as possible to increase the likelihood that their future target volumes will be reached. At the latest this should be done when the firms initiate their sales.

Building an own sales and marketing department with limited reach may be crucial for proving the technical and commercial viability of the products/services. This is often required before the firm can reach distribution deals and raise growth-phase venture

capital. In raising venture capital firms should also keep in mind that venture capitalists that focus on firms in different phases of their development behave differently: Seed/start-up-phase venture capitalists can help develop immature firms as they usually have a good understanding of the technology/business idea of the firms they invest in and have a long-term investment perspective. Growth-phase venture capitalists, on the other hand, can provide a lot of help in the exit phase as their contacts, e.g. to financial institutions, can be very important in moving the exit process forward. Thus, firms should take the venture capitalists' phase focus into consideration when judging the value added services different venture capitalists can provide.

The reason why large foreign companies buy firms from countries with small home markets and are willing to pay a premium for them is that they can cheaply multiply and distribute the technology, which has often been very expensive to develop, using their existing structures. In other words, they can bring the technology cheaply to a large number of potential customers. This would not be possible using the firms' internal resources as the necessary structures, e.g. distribution channels, are very expensive to build. Being acquired by a multinational company is thus beneficial for the firms as it means that their products/services can be brought quickly and cheaply to a global market, something that is necessary if the products/services are to succeed.

However, no firm in financial distress, no matter how promising the underlying technology/business idea is, will receive a fair sales price. Thus, R&D or other projects should not be pursued at the expense of financial health. This is because a poor financial situation leads to reduced negotiating power, also over issues other than price, in the exit process and thus leads to a poor valuation and bad conditions in general.

7.3.2. RECOMMENDATIONS FOR VENTURE CAPITALISTS

The next five years will be critical for the Finnish high-technology venture capital industry. This is largely because most of the funds collected during the boom years (1997-2000) are in the exit phase during these years. Hopes are, however, up as the current venture capital boom in the U.S. seems to be approaching Europe.

One critical issue is the valuation gap that exists between Finnish and American firms. What this means is that firms from the U.S. are valued 10-20 times higher than similar Finnish firms. In the words of a policy maker,

"We have a chronic undervaluation of Finnish shares that are outside of the stock market compared to e.g. the United States. It is a problem. Finland is an exotic place for venture capitalists. Capital would be available if exits would be available..."

Cross-border exists are clearly a solution to this problem as profitable exit opportunities are hard to find in Finland. Consolidation on a local and especially on an international level should also be pursued. In practice this can e.g. mean that a Finnish firm is merged with an American firm pre-exit. The newborn entity can then in due time be listed on the NASDAQ where the liquidity is clearly better than on the Helsinki stock exchange.

For the described development to be possible venture capitalists must build trusted relationships to foreign markets, especially to foreign venture capitalists, and develop capabilities in transforming firms to be ready for cross-border exits. Furthermore, the fact that technical and commercial proof-of-concept is often required before additional financing can be raised or mergers can take place has implications for domestic venture capitalists. More specifically, they should focus on finding enough funding for their portfolio firms so that providing proof-of-concept is possible. Otherwise the firms' will be valued below their real value when additional capital is raised or the firms are exited, if these activities will be possible at all.

The already many times mentioned fact that technologies and innovations in the high-technology industries grow old fast if they are not commercialized is another reason why venture capitalists should see to that their portfolio firms have enough capital to commercialize their products/services and to internationalize rapidly. However, at the same time venture capitalists should also keep in mind that firms in financial distress will receive a poor sales price no matter how promising the underlying technology/business idea is. Thus, the firms' finances must be kept healthy and they must not be under time pressure if a successful exit is to take place. In other words, the firm must have enough money for it to have time to negotiate a deal of its liking without risking bankruptcy. As follows, firms should not be allowed to pursue projects at the expense of financial

health since this leads to reduced negotiating power, also over issues other than price, in the exit process.

7.3.3. RECOMMENDATIONS FOR POLICY MAKERS

The availability of private risk capital can be seen as a key part of the financial system. This is because even though the venture capital industry is small in comparison to the overall size of the financial system, the firms it supports are often the most innovative, and for this reason also the most risky, in society. Hence, firms supported by venture capitalists are characterized by large information asymmetry, miniature cash flows, and by most of the value being tied up in intellectual, i.e. intangible, assets. As has been mentioned several times in this study, exits are a crucial part of the venture capital cycle as they are venture capitalists primary mechanism for signaling their quality and, thus, crucial if they are to be able to raise future funds. In other words, successful exits are crucial if venture capital is to be raised and to be available to emerging high-technology firms.

Large foreign companies buy firms from countries with small home markets and are willing to pay a premium for them because they can cheaply multiply the technology, which has often been very expensive to develop. They do this using their existing structures, e.g. manufacturing facilities. The products/services are then distributed using existing distribution channels, which are expensive to build but cheap to use once they exist. The technology can thus be brought cheaply to a large number of potential customers. As only a few Finnish high-technology companies possess the mentioned abilities, Finnish high-technology firms that receive venture capital financing will most likely be exited abroad. They are also likely to receive a better valuation than firms exited domestically in dong so. Resisting cross-border exits is, thus, unwise because in the fast paced high-technology industries technologies and innovations that are not commercialized as swiftly as possible are likely to be bypassed by other technologies and innovations. Therefore, firms must gain access to production facilities and global distribution channels as soon as possible to increase their likelihood of success. As these structures are very expensive to build emerging high-technology firms can do this only as a part of a bigger entity or by collaborating with one. Furthermore, it is good to keep

in mind that past exit success has a strong correlation with a venture capital firm's ability to raise future funds and thus stay in the business of venture capital. Consequently, foreign exits are crucial if venture capital is to be available to Finnish emerging high-technology firms. These facts mean that policies that try to restrict cross-border exits are not only unwise but also irrelevant; Unwise because they make it harder for Finnish firms' to succeed in a global competition and irrelevant because they do not give any benefit to the Finnish society. The mentioned points are strengthened by a recent study on foreign takeovers in the Nordic countries (Aanstad and Koch, 2005) which finds no differences in innovation activity between domestic companies and affiliates of foreign companies. Thus, there seems to be no reason to discriminate against companies owned by foreigners based on placement of R&D issues either.

As true as the above mentioned findings may be, maximizing the exit value requires that more than one serious bidder is involved. In other words, without a sufficient number of buyers, i.e. a competition between prospective buyers, the functioning of the exit market will be poor and the valuations lower than they would otherwise be. However, a sufficient number of potential acquirers will not be interested without a transparent flow of information, i.e. international knowledge about emerging Finnish high-technology firms. Therefore, improving the global visibility of Finnish portfolio firms is critical if they are going to receive fair exit terms and valuations. Policy makers, in addition to venture capitalists and industry organizations, should do their part in achieving the visibility needed for more successful exits to take place. One obvious step in this direction would be for all public institutions and agencies to publish all information and reports that are of potential interest to international investors in English. Furthermore, public agencies such as Tekes, Finnish Industry Investment, and Invest in Finland could collaborate with venture capitalists and industry organizations to create visibility for Finnish high-technology firms among important international stakeholder groups. Tangible initiatives that have been proposed to consolidate the fragmented efforts currently being undertaken include creating databases/portals of Finnish ventures, overall coordinated international promotion of Finnish ventures, and creating more international networking opportunities (Cardwell and Maula, 2004).

Based on the above mentioned realities, and the fact that firms in financial distress will receive a poor sales price no matter how promising the underlying technology/business idea is, firms should not be denied public financing on the grounds that they are likely to be sold abroad. The reason for this is that such actions are likely to reduce the price that will be paid for the firm in an exit, i.e. reduce the amount of capital that flows into Finland when firms are sold abroad. For the same reasons, firms negotiating position in the exit process should not be made weaker by calling public debt etc. back with the argument that it is in the best interest of the Finnish society that they stay in Finland.

In a report published by the Finnish Ministry of Trade and Industry (2004) it is concluded that 'Foreign investments in Finland are necessary for balancing the development of internationalization and for maintaining international competitiveness.' The report also states that 'Promotion of the growth of foreign investments in strategically important sectors will have to be made an increasingly integral part of the business environment policy.' The findings of this study wholeheartedly support these conclusions. However, as far as 'strategically important sectors' refers to the information and communication technology and the pharmaceutical and medical technology industries, which are largely financed using venture capital, a few things are worth remembering. First of all, increased financing will also, at least in the short and medium term, lead to more cross-border exits. In other words, increased amounts of foreign direct investments in the form of venture capital will also lead to an increase in the amount of firms being sold abroad. In the long-term this development would, on the other hand, probably reverse as a critical mass of firms in the relevant industries would develop in Finland. Furthermore, as firms in the mentioned industries are almost always born globals, outward investments would also increase as the firms internationalize. This should, however, be accepted as a natural part of the process of industries with global markets taking hold in Finland. To summarize: The growth of foreign investments in the high-technology sectors should be actively promoted but the underlying mechanisms regarding venture capitalists' way of operating and the determinants of success of the firms they finance should be understood and kept in mind during the process.

In light of the presented facts it is good that Finland's policy towards foreign ownership is mostly non-discriminatory: The policies used on domestic and foreign owned firms are more or less the same. However, foreign investors are sometimes treated worse than in other countries competing for their capital. This also affects to the venture capital industry as foreign investors investing in domestic venture capital funds are treated poorly in Finland compared to other countries. The problem arises from the fact that, as previously mentioned, most venture capital funds are organized as limited partnerships in which the venture capitalists' management firms act as the general partners. For Finnish investors this assures limited liability and tax transparency. The downside is that according to the current law foreign corporate investors that invest in the limited partnerships may be deemed to have a permanent place of business in Finland and therefore to be subject for taxation in Finland. This policy clearly restricts foreign investments in Finnish venture capital funds. The biggest harm from this is experienced by Finnish high-technology firms that are in this way deprived of much needed capital. Although the Government has announced that the mentioned tax law should be revised no timeline for such actions has been announced. Based on the findings of this study the mentioned tax law should be revised as soon as possible to ensure that foreign investors in domestic venture capital funds are treated similarly in Finland as in the countries competing for their capital. In this way the Government can assure that emergent high-technology firms are not unnecessarily deprived of much needed financing.

A final important issue to keep in mind from a public policy perspective is that firms active in technological areas where world class know-how is present in their geographical vicinity perform better than other firms. This means that public funding should focus on firms operating in areas where the Finnish know-how is world-class. Furthermore, Universities should focus their research efforts on areas where they have a chance of becoming among the best in the world if they want to spur entrepreneurship and the founding of successful University spin-offs.

7.4. LIMITATIONS OF THE STUDY

There are no studies without limitations. Some of the limitations of this study are discussed in this chapter.

This study focuses on growth oriented entrepreneurship and technological innovation in countries with small home markets. Despite of this the quantitative study's sample covers all of Europe. This is because no country with a small home market has experienced enough cross-border exits for them to be accessible for study using statistical methods. The results of the quantitative study thus talk for Europe as a whole and it is possible that individual countries exhibit different patterns. To check for this all the quantitative studies were run also without the firms from the country with the clearly most developed venture capital market in Europe, Great Britain. The results did not differ from the ones attained while studying Europe as a whole. Therefore no reason to believe that the results would not talk for all the individual countries as well as for the whole exists.

The quantitative study is in essence cross sectional as it studies the trade sale and post under-pricing value of the firms. This means that the important question of how value is created or destroyed after the exit is not dealt with. This limits the studies ability to judge the merits and disadvantages of cross-border exits from the point of view of the firms themselves and society as a whole.

A point that is good to keep in mind when cross-border IPOs are discussed is that they do not automatically imply foreign ownership. Thus, cross-border exits and domestic ownership are not necessarily contradictory. An example of this is that many firms from Great Britain are listed on the NASDAQ do to better capital availability but most of their owners, and analysts for that matter, are often Britons. In the context of this study this means that cross-border trade sales and IPOs are clearly different since the first ones always involve foreign majority ownership whereas the latter do not.

Another important issue relating to ownership is that many trade sales are partial. In other words, the sellers get at least part of the transaction value in - often illiquid - shares of the acquirer. The typical situation where a partial trade sale arises is when a

private company buys the portfolio firm using its own shares. It is good to keep in mind that in these cases a portion of the ownership remains in the hands of the original portfolio firm owners. The situation is best described as the former portfolio firm owners now owning a smaller part of a bigger cake. Although the original portfolio firm owners clearly lose control over the fate of the firm in a partial trade sale they have differentiated their ownership and thus lessened the risk of losing everything. In the long term this should mean that more funds are available to other high-technology firms in the venture capitalists' home countries. As this discussion shows the ownership issues relating to cross-border exits are rarely as simple as might perhaps seem. Thus, the implications of cross-border exits should be thought about in detail before conclusions are drawn as they are not as clear cut as may first appear.

7.5. AVENUES FOR FURTHER RESEARCH

In attempting to answer the research question presented in the Introduction (Chapter 1.2) this study has identified some potential areas for future research. These are now discussed.

A longitudinal study on how the value of firms' exited cross-border develops compared to firms exited domestically on a long-term perspective would be very interesting. It would also create valuable information on the merits and disadvantages of cross-border exits that could be used by especially ventures and policy makers in determining their position on the issue.

In the quantitative study it was found that firms supported by venture capitalists with an institutionalized position in the exit country generate lower proceeds and post under-pricing market values than other firms when they go public. As this study is unable to provide an explanation for this, in the light of previous studies, surprising result a study focusing on the underlying reasons seems warranted. Such a study would be important as it would increase the understanding of the factors influencing portfolio firm IPO valuation and the role played by venture capitalists in this process.

The propositions presented based on the case studies present several opportunities for future research. First of all the results should be tested using statistical methods to see if

they hold true. Secondly, some of the findings merit a closer inspection of the underlying factors. It would be very interesting and useful for ventures, venture capitalists, and policy makers to understand why seed/start-up and growth-phase venture capitalists behave differently. This is because the reasons for this difference in behavior have strong implications for firms raising venture capital and for what policy makers should take into consideration when trying to build a good environment for high-technology entrepreneurship. The results should also help venture capitalists that focus on firms in different development phases to work better together.

Another interesting issue is how serial entrepreneurship could be stimulated in Finland. This is important as serial entrepreneurs are critical for building the start-up culture needed if high-technology sectors are to evolve from a limited base.

Overall, the present thesis is one of the first studies on the impact and determinants of success of cross-border exits form venture capital investments. Among other things it shows that cross-border exits generate higher returns than domestic ones, give emerging firms access to much needed complementary assets in the case of trade sales, and are crucial if venture capital is to be available to emerging high-technology firms in countries with small home markets. In addition to being of interest to venture capital researchers, the results should help entrepreneurs, emerging high-technology firms, venture capitalists, and society as a whole to make best use of cross-border exits.

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9. APPENDICES

9.1. APPENDIX 1

Table 9-1. The variables used in the quantitative study, their description, and the source of the data for the variable.

Variable	Description	Source
Transaction value	The sum of all considerations passed between the buyer and seller for the ownership in a firm	Thomson Financials SDC Platinum Worldwide Mergers Acquisitions & Alliances Database Thomson Financials SDC Platinum VentureXpert Database
Proceeds	The amount of cash that is raised as a result of an initial public offering	Thomson Financials SDC Platinum Global New Issues Database Thomson Financials SDC Platinum VentureXpert Database
Post under-pricing market capitalization	The price per share multiplied by the total number of shares outstanding at the end of day two of trading	Thomson Financials DataStream Advance 4.0 Database Stock market home pages
Cross-border exit	Dummy variable indicating whether the portfolio firm is exited in a country different from where the firms headquarters are situated	Thomson Financials SDC Platinum Worldwide Mergers Acquisitions & Alliances Database Thomson Financials SDC Platinum Global New Issues Database Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database Firm home pages
Venture capitalist from exit country	Dummy variable indicating whether venture capitalist has institutionalized position in country where exit takes place	Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database Firm home pages

Cross-border venture capitalist from exit country	Dummy variable indicating whether the venture capitalist, in contrast to portfolio firm, has institutionalized position in country where exit takes place	Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database Firm home pages
Uncertainty about the quality of the portfolio firm	The number of days the portfolio firm has existed when exit takes place	Thomson Financials SDC Platinum Worldwide Mergers Acquisitions & Alliances Database Thomson Financials SDC Platinum Global New Issues Database Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database Firm home pages
Past performance of portfolio firm	Number of venture capital rounds the portfolio firm has received	Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database
Prominence of the venture capitalist	The number of days the oldest venture capital firm has existed when exit takes place	Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database Firm home pages
The firms potential for future growth	Total amount invested in the portfolio firm pre-exit	Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database
The 'hotness' of the market	Dummy variables indicating if firm was exited in 1997, 1998, 1999, or 2000	Thomson Financials SDC Platinum Worldwide Mergers Acquisitions & Alliances Database Thomson Financials SDC Platinum Global New Issues Database Thomson Financials SDC Platinum VentureXpert Database Thomson Financials VentureXpert Web Database Firm home pages
Industry	Dummy variables indicating the industry the firm is active in	Thomson Financials SDC Platinum Worldwide Mergers Acquisitions & Alliances Database Thomson Financials SDC Platinum Global New Issues Database Thomson Financials SDC Platinum VentureXpert Database

9.2. APPENDIX 2

Table 9-2. Descriptive statistics of the trade sale regression variables.

Variables	N	Mean	Std. Dev.	Min	Max
Log of transaction value	190	1.71	0.73	-1.10	3.53
Cross border trade sale in medical/health/life science	309	0.10	0.31	0.00	1.00
Cross border trade sale in information and communication technology	309	0.26	0.44	0.00	1.00
Cross border trade sale in non high-technology	309	0.21	0.41	0.00	1.00
Cross border trade sale	309	0.57	0.50	0.00	1.00
Total amount invested in firm pre-trade sale	309	31.77	128.24	0.00	1715.76
Medical/health/life science	309	0.11	0.32	0.00	1.00
Information and communication technology	309	0.48	0.50	0.00	1.00
Non high-technology	309	0.41	0.49	0.00	1.00
Age of venture capitalist at trade sale	309	10367.58	7730.22	24.00	38230.00
Cross border trade sale to venture capitalists market	309	0.25	0.43	0.00	1.00
Trade sale to venture capitalists market	309	0.58	0.49	0.00	1.00
Number of rounds company received, squared	309	6.54	10.86	1.00	100.00
Number of rounds company received	309	2.14	1.41	1.00	10.00
Age of firm at trade sale	309	4479.57	6611.78	92.00	38300.00
Trade sale in 2000	309	0.10	0.31	0.00	1.00
Trade sale in 1999	309	0.06	0.23	0.00	1.00
Trade sale in 1998	309	0.04	0.19	0.00	1.00
Trade sale in 1997	309	0.03	0.18	0.00	1.00

Table 9-3. Pair-wise correlations of the trade sale regression variables.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Log of transaction value	1.00																		
2. Cross border trade sale in medical/health/life science	0.03	1.00																	
3. Cross border trade sale in information and communication technology	0.05	-0.21	1.00																
4. Cross border trade sale in non high-	0.15	-0.20	-0.33	1.00															

technology																			
5. Cross border trade sale	0.19	0.29	0.46	0.45	1.00														
6. Total amount invested in firm pre-trade sale	0.32	-0.06	-0.04	0.10	0.01	1.00													
7. Medical/health/life science	0.01	0.45	-0.09	-0.20	0.04	-0.06	1.00												
8. Information and communication technology	-0.19	-0.32	0.59	-0.15	0.19	-0.09	-0.31	1.00											
9. Non high-technology	0.18	0.03	-0.53	0.27	-0.22	0.13	-0.32	-0.80	1.00										
10. Age of venture capitalist at trade sale	0.19	0.04	0.21	-0.15	0.08	0.03	0.11	0.20	-0.27	1.00									
11. Cross border trade sale to venture capitalists market	0.19	0.14	0.34	0.07	0.46	0.11	0.11	0.19	-0.26	0.17	1.00								
12. Trade sale to venture capitalists market	0.04	-0.11	-0.07	-0.29	-0.39	0.12	0.04	0.01	-0.03	0.08	0.51	1.00							
13. Number of rounds company received, squared	0.04	-0.01	0.03	-0.02	0.00	0.06	0.18	0.00	-0.11	0.14	0.08	0.03	1.00						
14. Number of rounds company received	0.05	-0.03	0.09	-0.05	0.02	0.05	0.15	0.07	-0.16	0.21	0.15	0.09	0.93	1.00					
15. Age of firm at trade sale	0.21	-0.08	-0.18	0.19	-0.04	0.30	-0.10	-0.25	0.31	0.01	-0.01	-0.07	-0.07	-0.09	1.00				
16. Trade sale in 2000	0.06	-0.02	0.07	0.04	0.08	-0.05	-0.07	0.13	-0.09	0.02	-0.01	-0.09	-0.11	-0.12	-0.02	1.00			
17. Trade sale in 1999	0.05	-0.10	0.07	-0.07	-0.06	0.02	0.03	-0.08	0.06	-0.10	0.03	0.05	-0.06	-0.07	-0.03	-0.10	1.00		
18. Trade sale in 1998	0.03	0.07	-0.07	0.05	0.03	-0.05	-0.08	-0.04	0.09	-0.06	0.04	0.05	-0.09	-0.11	-0.06	-0.08	-0.06	1.00	
19. Trade sale in 1997	0.07	0.19	-0.11	-0.05	-0.02	-0.05	-0.07	-0.11	0.16	-0.04	-0.05	0.01	0.02	0.02	-0.09	-0.07	-0.06	-0.04	1.00

9.3. APPENDIX 3

Table 9-4. Descriptive statistics of the IPO regression variables.

Variables	N	Mean	Std. Dev.	Min	Max
Log of post under-pricing market value	186	2.23	0.66	0.24	4.88
Log of proceeds	117	1.83	0.50	0.70	4.03
Cross border IPO to venture capitalists market	186	0.12	0.32	0.00	1.00
IPO to venture capitalists market	186	0.76	0.43	0.00	1.00
Information and communication technology	186	0.69	0.46	0.00	1.00
Medical/health/life science	186	0.31	0.46	0.00	1.00
Cross border IPO in medical/health/life science	186	0.08	0.26	0.00	1.00
Cross border IPO in information and communication technology	186	0.15	0.35	0.00	1.00
Cross border IPO	186	0.22	0.42	0.00	1.00
Total amount invested in firm pre-IPO	186	23.55	56.11	0.00	550.00
Number of rounds company received, squared	186	9.15	23.58	1.00	289.00
Number of rounds company received	186	2.35	1.91	1.00	17.00
Age of venture capitalist at IPO	186	10216.04	7782.32	141.00	36788.00
Age of firm at IPO	186	3173.98	2754.66	148.00	18808.00
IPO in 2000	186	0.32	0.47	0.00	1.00
IPO in 1999	186	0.13	0.34	0.00	1.00
IPO in 1998	186	0.11	0.31	0.00	1.00
IPO in 1997	186	0.04	0.20	0.00	1.00

Table 9-5 Pair-wise correlations of the IPO regression variables.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Log of post under-pricing market value	1.00																	
2. Log of proceeds	0.77	1.00																
3. Cross border IPO to venture capitalists market	0.13	0.01	1.00															
4. IPO to venture capitalists market	-0.21	-0.34	0.24	1.00														
5. Information and communication technology	0.21	0.14	-0.10	-0.02	1.00													
6. Medical/health/life science	-0.21	-0.14	0.10	0.02	-1.00	1.00												

7. Cross border IPO in medical/health/life science	-0.08	-0.07	0.44	-0.05	-0.49	0.49	1.00											
8. Cross border IPO in information and communication technology	0.37	0.30	0.40	-0.31	0.32	-0.32	-0.16	1.00										
9. Cross border IPO	0.26	0.21	0.64	-0.30	-0.05	0.05	0.54	0.75	1.00									
10. Total amount invested in firm pre-IPO	0.29	0.36	0.01	-0.08	0.07	-0.07	-0.09	0.29	0.18	1.00								
11. Number of rounds company received, squared	-0.04	0.11	0.26	0.09	-0.23	0.23	0.28	-0.09	0.12	0.08	1.00							
12. Number of rounds company received	-0.04	0.13	0.23	0.12	-0.33	0.33	0.23	-0.13	0.05	0.13	0.89	1.00						
13. Age of venture capitalist at IPO	0.14	0.13	0.23	0.15	0.09	-0.09	-0.13	0.15	0.04	0.26	0.09	0.19	1.00					
14. Age of firm at IPO	-0.07	-0.08	0.10	0.01	-0.11	0.11	0.05	0.01	0.04	0.02	-0.06	-0.08	-0.09	1.00				
15. IPO in 2000	0.08	0.12	-0.14	0.02	0.14	-0.14	-0.14	0.02	-0.07	0.28	-0.05	-0.04	0.09	-0.06	1.00			
16. IPO in 1999	0.01	-0.05	0.05	0.01	0.16	-0.16	-0.17	0.16	0.02	-0.03	0.01	0.06	0.08	-0.19	-0.37	1.00		
17. IPO in 1998	-0.01	-0.02	0.10	-0.03	-0.05	0.05	0.06	0.05	0.08	-0.16	-0.10	-0.17	0.01	0.22	-0.26	-0.17	1.00	
18. IPO in 1997	-0.10	-0.10	0.20	0.12	-0.07	0.07	0.09	0.03	0.09	-0.08	0.08	0.18	-0.02	0.08	-0.14	-0.09	-0.07	1.00

Note! The background information was gathered before the interview whenever possible and verified with the interviewee. Only the top level of the discussion topics was presented to the interviewee. The lower levels of the topics served only as reminders for the interviewer.

Interview agenda

Background information

- Name, title, and organization
- Time spent in firm
- Portfolio firm founding date
- Exit date and method
- Name and country of all venture capitalists that invested in firm
- Firm personnel per function and country, also historical figures
- Firm key financial figures, i.e. consolidated financial statements, also historical figures
- Total amount invested in firm pre-exit
    - Date and sum of rounds
- Trade sales: Transaction value
- Trade sale: Acquirer name and country
- IPO: Exchange, proceeds, and post under-pricing market value (market value at end of day two of trading)
- Target markets of portfolio firm
- All available press releases
- All available documentation from annual general meetings and board of directors meetings
- Venture capitalists: Exits performed (a) IPOs, (b) Trade sales, (c) Domestic, and (d) Cross-border

Discussion topics

1) What was the firm's situation pre-exit?
    a) Capital wise
    b) Internationalization wise

i) Target countries

ii) Demand or supply driven?

iii) Was the firm present in the exit country?

iv) Effect of emerging markets and customers/possible partners' activity in these markets?

c) Complementary assets wise

i) Brand

ii) Distribution network

iii) Complementary products

iv) Production scale-up

v) Clinical trial infrastructure

2) How did (a) domestic and (b) cross-border venture capitalists affect the firm's pre-exit development in terms of:

a) Internationalization target countries

i) Home bias

b) Professionalization measures

i) Corporate governance

ii) Accounting standards

iii) Organizational structure

iv) Others

c) How did these pre-exit factors affect the exit process?

3) What where the motivations for initiating the exit process?

a) Need for capital

i) Unavailability of further private risk-capital

b) Trade sale: Need for complementary assets

c) Maturity of firm

i) Decline in value of venture capitalists non-financial contributions

d) Macroeconomic conditions

e) Venture capitalists' necessity to exit

4) What where the motivations for the chosen exit method, i.e. IPO versus trade sale?

a) What effect did the founders will to retain control over the firm have on the decision?

i) Founders role pre/post-exit

5) Why was a cross-border exit chosen?

a) Capital availability

b) Macroeconomic conditions

c) Signaling quality

d) Better familiarity with industry abroad (Information asymmetry)

e) Cross-border venture capitalist will to exit in home market

f) Finish high-technology market characteristics

   i) Long distance to main markets

g) Trade sale: Suitable buyers not available in Finland (Complementary assets and size)

h) IPO: Better liquidity in foreign market

i) IPO: Most investors that would have participated in IPO already exposed to firm through investment in venture capital fund (Portfolio diversification)

6) What was the process through which the exit was conducted? How did the following factors affect the process:

   a) Time used for process

      i) Was there sufficient time to map out potential buyers and to perform adequate 'road-show'?

      ii) Time pressure, i.e. acute need for capital

   b) Negotiating power

      i) Number of firms interested in buying firm

7) How did (a) domestic and (b) cross-border venture capitalists influence the exit process?

   a) Contacts and networks

   b) Home bias

   c) Certification in exit market

   d) Venture capitalist's will to build reputation, i.e. grandstanding

8) Trade sales: How was the final acquirer chosen?

   a) Complementary assets

   b) Transaction value

   c) No alternative

9) How have the Finnish operations of the firm developed post-exit?

   a) Functions

   b) Personnel

10) What has happened to the original founders of the portfolio firm?

   a) Are they still in Finland?

b) Have they founded new ventures?

11) Venture capitalists: Where firm internal or external factors dominant in the decision to start the exit process?

12) Venture capitalists: How do assumed future exit possibilities affect the investment decisions?

a) Characteristics of firms (industry, age, risk, etc.) investments are made in

9.5. APPENDIX 5

Table 9-6. Summary of Focus Inhalation's development. All data gathered from public sources, predominantly the archives of the National Board of Patents and Registration of Finland.

Focus Inhalation				
Founded	2000			
Exit	2003			
Years to exit	-3	-2	-1	0
Year	2000	2001	2002	2003
Personnel (Total)	0	37	60	35
Finland	0	37	60	35
Firm equity value (MEUR)	0.01	2.16	2.16	1.06 (at exit)
Share value (Euro)	1.00	4.25	4.25	2.09 (at exit)
VC investments in firm (MEUR)	0.00	6.69	3.39	2.92 (pre-exit)
VC ownership	0%	76%	76%	
VC investors		Sitra Bio Fund Management	Sitra Bio Fund Management	Sitra Bio Fund Management
Sales (MEUR)	0.00	0.00	0.00	0.34
R&D expenses (MEUR)	0.01	4.44	3.70	4.28
Operating income (MEUR)	-0.08	-4.93	-3.98	-4.99
Income (MEUR)	-0.08	-4.94	-4.20	-5.81
Presence	Finland	Finland	Finland	Finland
Markets	None	None	None	Europe

Table 9-7. Summary of Inion's development. All data gathered from public sources, predominantly the archives of the National Board of Patents and Registration of Finland.

Inion					
Founded	1999				
Exit	2004				
Years to exit	-4	-3	-2	-1	0
Year	2000	2001	2002	2003	2004 (January-June)
Personnel (Total)	24	43	59	59	69
Finland					
Firm equity value (MEUR)	2.80	4.02	24.65	24.65	34.27 (pre-IPO); 129 (IPO valuation)
Share value (Euro)	280.00	329.13	725.53	725.53	714.33 (pre-IPO)
VC investments in firm (MEUR)	3.00	0.00	23.00	0.00	10.00
VC ownership	53%	53%	64%	64%	73% (pre-IPO)
VC investors	Bio Fund Management Bank von Ernst		CapMan Capital Management Undisclosed Non Venture Firm Bio Fund Management Odlander, Fredrikson & Co POD Holding		Bio Fund Management Odlander, Fredrikson, & Co.
Sales (MEUR)	0.00	0.16	0.74	2.99	2.39
R&D expenses (MEUR)	2.16	2.65	2.34	1.72	
Operating income (MEUR)	-2.63	-4.61	-9.69	-7.38	-3.43
Income (MEUR)	-2.66	-4.66	-11.28	-8.06	-3.41
Presence	Finland	Finland	Finland, U.S.	Finland, U.S.	Finland, U.S.
Markets	None	Europe	Global	Global	Global

Table 9-8. Summary of Iobox's development. All data gathered from public sources, predominantly the archives of the National Board of Patents and Registration of Finland.

Iobox					
Founded	1995				
Exit	2000				
Years to exit	-4	-3	-2	-1	0
Year	1996	1997	1998	1999	2000
Personnel (Total)	1	1	1	37	100
Finland	1	1	1	33	75
Firm equity value (MEUR)	0.00	0.10	5.04	33.04	186.90 (at exit)
Share value (Euro)	16.81	198.32	77.57	229.65	714.81 (at exit)
VC investments in firm (MEUR)	0.00	0.00	2.52	15.20	0.00
VC ownership	0%	0%	50%	72%	0%
VC investors			3i Eqvitec partners Alta Berkeley Associates	SFK Finance Eqvitec partners Alta Berkeley Associates CapMan Capital Management MSDW Capital Partners Eden Capital BancBoston Investments Robertson Stephens Pino Venture	
Sales (MEUR)	0.08	0.08	0.04	0.06	0.48
R&D expenses					

(MEUR)					
Operating income (MEUR)	-0.01	-0.03	-0.17	-3.39	-13.32
Income (MEUR)	-0.01	-0.03	-0.17	-3.41	-13.44
Presence	Finland	Finland	Finland	Fnland Sweden Germany Great Britain	Fnland Sweden Germany Great Britain
Markets	Global	Global	Europe	Europe	Europe

Table 9-9. Summary of Remix's development. All data gathered from public sources, predominantly the archives of the National Board of Patents and Registration of Finland.

Remix					
Founded	1990				
Exit	2001				
Years to exit	– 4	– 3	– 2	– 1	0
Year	1997	1998	1999	2000	2001
Personnel (Total)	2	2	2	7	7
Finland	2	2	2		
Firm equity value (MEUR)	0.00	0.00	0.00	2.10	6.90 (at exit)
Share value (Euro)	25.21	25.21	25.21	21000.00	8.63 (at exit)
VC investments in firm (MEUR)	0.00	0.00	0.00	0.59	0.00
VC ownership	0%	0%	0%	28%	0%
VC investors				Holtron Capital Partners	
Sales (MEUR)	0.30	0.29	0.29	0.30	0.49

R&D expenses (MEUR)					0.05
Operating income (MEUR)	0.04	0.05	-0.03	-0.49	0.06
Income (MEUR)	0.04	0.04	-0.03	-0.50	0.01
Presence	Finland	Finland	Finland	Finland, U.S.	Finland, U.S.
Markets	Finland	Finland	Finland	Europe, U.S.	Europe, U.S.